The Builder.

Vol. LII. No. 2200. Saturday, March 5, 1887.

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Exeter.

THE second of the series of volumes on the Historical Towns and Cities of our Country is now before us.* Its appearance will be welcomed by, we hope, a large number of readers, not only on account of the importance of the city whose history it relates, but from the circumstance that it is written by the Regius Professor of Modern History at Oxford in his happiest and most fluent style. The interest never flags, and in the narration of the beginnings of the city in the unrecorded dim ages of the past, equally with that of its modern growth, the attention of the reader is sustained, and both subjects, diverse as they are, are set forth graphically in well-chosen words.

While it has always been the head town of its district, Exeter is happily described as having kept its name essentially the same through all changes, and its being and its position unbroken throughout all ages. It is the one great city of the Roman and of the Briton which did not pass into "English" hands "till the strife of races had ceased to be a strife of creeds, till 'English' conquest had come to mean simply conquest, and no longer meant havoc and extermination. It is the one city of the present England in which we can see within recorded times the Briton and the Englishman living side by side. It is the one city in which we can feel sure that human inhabitation and city life have never ceased from the days of the early Cæsars to our own." It is satisfactory to think that in the case of Exeter so much can be said by the Regius Professor. It is to be hoped that further research will show the same of some others of our English cities, and that we shall learn in time to believe that the various hordes, the mixed races who made happy hunting-grounds of the land of the Romano Briton, were not guilty, as so many of us have been too long taught, of the utter extermination of the race well advanced in most of the arts, then occupying the soil.

Reference is made to the good reasons for supposing that the site of Exeter was occupied by the ancient Britons. Its site is very similar to what was chosen elsewhere by that people for an *oppidum*. It stands, as so many of us well know, on an elevated table-land rather than a hill, there being a valley west and east, and the broad river of the Exe on the south, the approach being by a narrow ridge of land on the north-east. Such a position seems to have been formed by nature as the site for human habitation, and accordingly there is evidence that early inhabitants occupied it, not only in its name, *Penholt Keyre*, a singular mixture of Welsh and English, by which it is called in some dim traditions of very doubtful authenticity, but by a few discoveries of relics which can be classed as ancient British, or better still, as prehistoric. It is also called Caer Wisc, this being the earliest form of its present name, "the City on the Exe."

Geographers, like Ptolemy, bear witness of its existence, and there can be but little doubt but that Exeter actually stands on the site of the Roman city Isca Damnoniorum; for although some attempts have been made to assign the position of the city so called to another site, yet none has yet been found on the banks of the Exe, which so completely fulfils all the conditions which we should expect to find on the site of a Roman city. It was walled at an early period, and indeed several writers have endeavoured to show that portions of the walls still standing are of Roman workmanship. Dr. Freeman is, however, content to think that the Roman-looking masonry which remains has been re-used on some rebuilding. The Icknield-street is to be traced up to and across the city. Roman coins of early date, bronze penates of great beauty, pottery, a very few traces of tesselated pavement, and other relics of the Roman race have been discovered, but no inscribed stones have been found within the area of the walls. Still, it is the name which the city has borne unchanged through so many ages that tells us of its continuance. Thus the Isca of the Roman becomes the Exanceaster of the Saxon, which like the Caer Wisc of the olden time, can but mean, like the Exeter of to-day, the City on the Exe. Dr. Freeman passes over entirely some recent discussions relative to the position of Exeter in Roman times, but to us the continuance of the name to the present site seems at once to refute these, and the more so since no such continuance of name can be shown in relation to the other sites spoken of.

The book before us gives a few notices of discoveries made, but still it must be matter of comment that Exeter has yielded so very few evidences of its early history during any of the recent excavations that may have been made during drainage works or the rebuilding of houses. This is a subject which we would commend to the attention of local antiquaries, in the belief that many discoveries have to be made within the area of the walls, which must of necessity throw light on the early history of the city. Those few who doubt the position of Isca readily assent that modern Exeter actually stands on a Roman site.

"And now comes in the great distinction of all between the history of Isca, or of any other city of Britain, and the history of almost any city of Gaul. It comes to this, that there is no history of Isca. We have no record to tell us either when the peninsula hill came under the power of the Roman, or when it passed away from his power." Even the plan of the modern city, which presents an arrangement of two main roads crossing one another at right angles, with gates of entrance through the walls fairly well in the centres of their principal faces, which would agree with the cardinal points, were the city quite east and west, which it is not, is shown to have grown to its present form in recorded times. This relates, however, only to the roadway from the east. There is fair evidence that the present line supersedes another more to the south, which would have connected the two gates in a fairly direct line, the steep nature of the descent of the bank of the river Exe having to be taken into account. Allowance being made for this, it must be acknowledged that the modern plan of Exeter shows its streets laid out with so much system, at right angles to one another, as to render a fair reason for belief that they run fairly close to the plan of the Roman city. It is almost superfluous to say that the arrangement of laying out a city, in Roman times, by streets at right-angles to one another, is now proved by their actual discovery at Silchester, Verulamium, and many other places, while the tradition of such arrangement exists in several other cities of Mediæval date, such as Oxford, which has no evidence of Roman origin.

The fate of the Roman city is unrecorded, and our author's belief that it did not pass into the hands of the Saxon invader until the days when the latter had embraced Christianity is founded on the slenderest of inferences,—at any rate, so far as regards the temporary occupation of the city. It agrees fairly well with what is known, and that is not much, of the progress of Saxon conquest westward. The failure of evidence relating to the early history is certainly a curious feature for comment in the annals of the city; and this is as true of the early Saxon period as of Roman or British times.

Our author feels himself on surer ground when he speaks of the state of parties in the reign of King Athelstan. In 926 it is apparent that a certain number of the inhabitants were British, for in that year, the king being on the point of proceeding against the Britons

* Historic Towns, Exeter. By Edward A. Freeman, D.C.L. London: Longmans, Green, & Co. 1887.

further to the west of Exeter and in Cornwall, took the prudent but forcible precaution of removing the Britons from the city, considering that it was not safe to leave a probable enemy behind him in his progress. This statement shows us that for previous years the two races,—the original possessors and their conquerors,—lived together in the same city. The existence of the vanquished race is accounted for from the belief that the Saxon conquerors were Christian, and that this prevented the extermination which would have befallen them, had the victory been of earlier date. May it not rather be that all the tales of the extermination of Briton by Saxon are exaggerations? That terrible slaughters and burnings did occur no one can question; but that this amounted to the annihilation of the entire race, as some suppose, seems hard of belief. Here, at Exeter, at any rate, is agreeable evidence, almost as soon as direct history comes to render its testimony on matters relating to the city, of the two races living side by side.

Dr. Freeman suggests that the lines of demarcation were so exactly defined that one portion of the town was the Englishry, the other the Welshry, with its distinctive churches dedicated to British saints, such as Sts. Kerian, Petrock, &c. St. Sidwell's, the church of the local saint, was, however, outside the walls.

It is in the century before the date just named that the earliest historical event is recorded. This is the Danish occupation of the city in 876, up to which time it was undoubtedly in Saxon possession. It was recaptured by Alfred under circumstances which show us that it was then a place of strength, and there is occasion for fair inference that the burh, or castle, was erected at this time. The position of the castle is at the north corner of the city. The line of the city walls encloses it, there is no external break or projection, its area being wholly within the city, like the donjon of a Norman castle, in relation to the walls of the outer ballium. Its age is, doubtless, open to much speculation, for the steep scarped sides of the hill have many features in common with British works, while the lines of the city wall show that when the Romans drew around the city their ramparts of stone, they so carefully brought them around the castle hill as to enclose it wholly within the inhabited area.

The walls are recorded by so good an authority as William of Malmesbury to have been built by Athelstan, with towers and with squared stones. This work was probably only a substantial repair of the older masonry, and it is of interest as being one of the very few records of military works stated to have been executed in stone in Saxon times. Although the Saxons appear from recorded history to have been such great builders of churches and castles, yet in the majority of cases we are forced to believe that the works executed were of timber and not of stone, so far as the churches were concerned; and of earth and stockades to the castles. The non-existence of Saxon works of importance must ever be matter of surprise and regret. The almost universal overthrow of their works points to the supposition that a general want of durability must have characterised them. On no other supposition can we account for the almost complete disappearance of the Saxon churches, all their castles, except the mounds, and all their other constructive works. When a piece of walling is met with in some of the churches, of only moderate size, which alone remain, it is of poor, or at least, not good masonry, particularly in the earliest examples. Some few of perhaps the latest in date we are ready to admit are equal to or better than the earliest Norman work. It is, of course, something akin to heresy to breathe any word of disrespect of anything Saxon to our author. In these pages, too, as in all his other works, the mixed hordes of Saxon invaders who harried the land before they settled upon it, appear only to be known to him as "English." This little conceit of his must be not a little confusing to general readers, who will be loth to believe in the existence of "English" until Briton and Saxon, Dane and Norman, and their associated tribes, had all grown together so as to form our present race.

The Danish invasion brought more than one attack upon Exeter, and in the last, in 1003, the city was taken by Swegen and plundered. On this occasion a large portion of the wall was broken down. The ecclesiastical history of the city must have had its beginnings in early times, but, like the civil history, it is unrecorded. The earliest authentic record that has come down to us is of the time of Ethelstan, when there is evidence of the foundation of a monastery by him, this being afterwards augmented or altered in some manner that is not clearly indicated by King Edgar in 968. But the great change of all in the ecclesiastical history was when the city became, but only at a comparatively late period, the site of the united bishopric of the West. In the reign of Edward the Confessor two or more bishoprics were sometimes united under a single bishop, and thus we find the adjoining Sees of Devonshire, Cornwall, and the distant See of Worcester all held by Lyfing, the seat of the first of these then being at the town of Crediton, which, apparently, must always have been a smaller place than Exeter. Lyfing's successor, Leofric, however, in 1050 effected a change which has for ever since associated the bishops with Exeter. While he united the two Sees of Cornwall and Devonshire together, a work which has only been undone within the last few years, he removed the seat of the bishopric from the smaller to the more important city, a change which has been attended with happy results. The history of the cathedral church is well told by our author, and his clear outline of its rise and progress will be read with interest. The aim of this volume and of the others of the series, is not to produce a mere guide-book of the city or town described, and for several reasons this is undesirable. Still, the architectural history of the cathedral being given as it is makes us regret that some more space was not given to a description of the fabrics of the parish churches or of the remains of the monastic establishments. We may here make a digression from the arrangement of the book before us and refer to the curious group of parish churches which is shown to have existed in Exeter in early times. As in the case of the majority of the churches of London, there is no record of their foundation.

Indeed, except in regard to two of the churches, from the evidence before us, the earliest general record of their existence appears to be in the reigns of Richard and John, when their number, with chapels, was over thirty. If any of our readers will turn to a map of Exeter and consider the comparatively small size of the city within the walls, they must, while making due allowance for a certain amount of suburbs, be surprised at the state of society which should have called forth the foundation of this remarkable number of churches. It is apparent that later times, following the reigns of the kings named above, did nothing for increasing the number of these parochial churches. It was left entirely for modern days to meet the needs of increase of population. On the contrary, it is apparent that subsequent years witnessed the destruction of many of them. A settlement of the number of parishes is spoken of under the date of 1222, when they were reduced to nineteen only. What became of the suppressed churches does not appear. This number was reduced to four by Act of Parliament, 1656, when the cathedral was formed into two separate churches, in addition to the four referred to, by a wall being built to divide the nave from the east end. The two portions were then used by two congregations.

The names of the saints to whom these churches were dedicated show not only a strong Celtic, but also a Saxon element. Many of the names also are curious from their suffixes to indicate position or difference, such as St. Mary More, St. Mary Steps, St. Mary Arches, Allhallows-on-the-Walls; while several are unusual dedications, such as to SS. Sidwell, Cuthbert, Pancras, and Keryans. The name of the British St. Petrock occurs, as does also that of the British St. David. St. Martin's Church was dedicated in 1065, and St. Olaf's is mentioned a little earlier, but none of the others appear to be referred to until the period already named.

Not a little curious is the record of the foundation of the monastic houses of Exeter, which here, as in so many other places sprang up in different quarters of the city, and at their beginnings at least "the bishop and clergy looked with no friendly eye on the new comers." The hospitals were numerous, and the evidences of the long continuance of leprosy are not a little curious.

We have already referred to the probable foundation and continuance of Exeter Castle in early times. Its history during the Norman period is more clearly indicated. The Norman William, whose easy capture of the rebellious city, and breaking up of the Western opposition, is graphically told, entrusted the erection of the castle to Baldwin. As was usual in almost all our early fortresses, it had its separate chapel within the enclosure of its walls, and this, like Dover, Hastings, Windsor, and many other places, was collegiate. It was dedicated to the Virgin Mary. The castle appears to have been strong enough not only to hold the city in check, but to have been built so quickly as to enable the attack made by the sons of Harold in 1069, to be easily beaten off. The history of the Temporal Lords of Exeter is no less interesting than that of the Spiritual, but that of the third governing power, the municipality, now demands our notice.

One of the most interesting features which the volume before us reveals is the municipal record. We find mention of the Portreeve early in the eleventh century, when he acted on behalf of Queen Emma. We find him, again defending the city against William the Conqueror; but we then find some other authority in addition. "In the narrative of the Conqueror's sieges we have seen two classes of men, and seemingly two assemblies in which they met and acted." "Were the men who disowned the submission a popular assembly, reversing the decision of its magistrates, or a patriotic army throwing off the authority of faint-hearted officers?" Be this as it may, it is curious to note that the more ancient portreeve or provost lived on by the side of the mayor, in the shape of two or four bailiffs, seneschals, or stewards." Here, at least, the portreeve did not merge into the mayor. His court was called the *prætorium*. The name is as old as 1254. The name "is most likely connected with the belief that a Romanesque building in Waterbury-street, which survived till the present century, and which we would fain believe was the Guildhall of William Hoel, the portreeve, was the Roman *prætorium*."

We find the mayors of the charters which were granted in succession to the city by kings and lords, assisted by various officers and a council, sometimes of twelve, sometimes a double jury, and even of thirty-six. "It is hard, indeed, to grasp the details, but it is easy to trace the main outlines of the constitutional history of Exeter. An oligarchy grew up which displaced an older and freer system." "It was not hereditary." "It came of self-election."

The guilds, trading and religious, or a mixture of both, are heard of at an early period; but here, as is the case so frequently elsewhere, there is nothing whatever to show how they began. Our author tells us that he has not examined the archives in the Guildhall, or which, let us say, ought to be in the Guildhall. This is to be regretted; for, since the earliest history is so meagre, and the beginnings of things so completely unrecorded, it is highly desirable that any information to be derived from either the municipal or the ecclesiastical records should be carefully sought for. The documents relating to the early bishopric are not numerous, and they have been of late years critically examined by more than one student of our early history. May what can be derived from similar examination of the treasures of the Guildhall be speedily set before us! The record of documents, and the record of what may be learned from the investigation of whatever relics may be met

with in excavations: to these two sources may we hope for further evidences of the history of the city.

The work contains interesting chapters on the relation of Exeter to the kingdom of England, 1225 to 1688; others on municipal and ecclesiastical Exeter; while the concluding chapter treats of the modern period from 1688 to 1886. In the latter, the demolition of the old city gates, the removal of Bedford House, the destruction of many of the buildings of the ancient castle, and of the old Collegiate Chapel, are referred to. In recent years the rebuilding of the Church of St. Mary Major has been effected "with a spire of Northamptonshire fashion, which has oddly changed the look of that part of the close." Why this old church should have been swept away must be matter of regret to more than the Exeter folk, and the more so since it occurred such a short time ago, in days when the antiquarian and art value of our old buildings had been recognised throughout the country.

Passing reference might have been made with advantage to another Exeter loss, since it is one which was intimately connected with the early history of the town. St. Sidwell is reported by tradition to have been beheaded near a well, and Hedwyllmed, at St. Sidwell's, was pointed to as the site. The progress of the railway works here in 1858 revealed the well, with masonry of so ancient an appearance as to lead to the supposition that it was in part of Roman date. A coin of Nero was also found, together with a number of pipes by which water had been laid on to the city, and the precinct in Mediæval times. The whole of the remains were destroyed as soon as found, although it is matter for congratulation that an appreciative observer was at hand, whereby we have some record of what otherwise would have been lost to history.

Exeter, which is happily described as "the city which, as not becoming English till Christian times, has lived the most uninterrupted life, Roman, British, and English, while it has largely shared with York the character of an abiding capital." "The city which has sat on its hill as a dwelling-place of men, with an unbroken life of more than eighteen hundred years,—the city by the side of which most of the capitals of Europe are things of yesterday,—can hardly sink, like some of its fellows, to be a forsaken ruin or a common market-town. Still, Exeter," says our author, "is emphatically a city of the past." We venture to think that the increase of the city and its surroundings is more hopeful for the future. We know of new streets and avenues laid out, new buildings erected. We see evidences of life and progress on every side.

The volume is illustrated with two interesting reproductions of old engravings, the frontispiece being a bird's-eye view of the city from Brown and Hohenberg's "Civitates Orbis Terrarum," 1618, which agrees extremely well with Izaache's map of the seventeenth century. There is also an imaginary plan of the city in the eleventh century, and a good map of Exeter of to-day.

We have said enough to show the nature of this interesting volume. In conclusion, we can but express the hope that its varied contents and its moderate price will cause it to be in the hands of a great many of our readers.

NOTES.

THE Government Railway and Canal Traffic Bill was introduced into the House of Lords on Monday, by Lord Stanley of Preston, but no statement has yet been made regarding it, this being reserved for the occasion of the second reading. We intend to review the provisions of the Bill in an early number, but may now remark that, while very much on the lines of Mr. Mundella's abandoned measure, there are striking points of difference—chiefly relating to the constitution of the Railway Commission, and the attention given to the subject of canals. We have recently alluded to the inadequate nature of the proposals affecting this latter point in previous legislation, and are pleased to find that the Government are now dealing with it in a vigorous manner. The unauthorised application of a railway company's funds to the acquiring of canal property is absolutely prohibited, the clauses dealing with this subject being definite and drastic; and they serve to show more clearly than ever the way in which mischief might have been prevented had such prohibitions existed in time past. A great deal of responsibility rests upon the Board of Trade, as before, in respect of deciding as to rates and charges, and opposition on the part of the railway companies to this part of the measure may be regarded as certain. They have also views of their own upon preferential rates, which are shared by very high authorities, but this is a large question, and must be deferred for the present.

IT is to be regretted that the Labour Statistical Bureau, which was inaugurated a few months ago with the concurrence of Parliament, should be in difficulties almost at the very outset of its career, having broken down on the point which is generally fatal to these inquiries, viz., that of wages. When any private attempt has been made to examine this subject, it has almost always collapsed when this question is asked; for, although the inquirer may occasionally have been successful, he has usually found that employers have the greatest repugnance to stating how much they pay their "hands." One would have thought that a circular under Government supervision would be more fortunate in obtaining information; but it appears that the Board of Trade has formulated its inquiries with so little discretion, and with such an air of dictation, that it has excited the greatest indignation amongst some of our largest trades, such as those connected with engineering and iron-working, and many of them decline to answer. Those who are at the head of the movement ought to have kept themselves better advised as to the extreme jealousy that prevails in many trades on the subject of wages. Many a valuable point of information would doubtless have been forthcoming, if the inquiry had been made as a matter of courtesy rather than in the shape of a demand. We fear that we are still a long way distant from the excellent statistical information which the American Government furnishes to the public.

THE National Memorial to the late Professor Fawcett, M.P., executed for the subscribers by Mr. Albert Gilbert, A.R.A., and lately fixed in Westminster Abbey, is a very happy departure from the conventional form of monument, in that it emphasises rather the man himself than his mere outward form and appearance. The memorial is of bronze, and fills the trefoiled head of an arch in the wall-arcading under the south-west tower, rather too much above the level of the eye to be examined with ease or comfort. The upper lobe of the trefoil is occupied by a medallion portrait of the face, half-turned to the spectator, and a little upwards, expressive of the blindness,—which is frankly acknowledged, and which turns to pathos the gentle resignation of the strong and intellectual features. The lower and larger part of the monument is filled up by a series of seven small figures expressive of Fortitude, Justice, Sympathy, Zeal, Industry, and Brotherhood, against an architectural background, which has, unfortunately, been made too poor—probably in the endeavour to give it due subordination, and which sadly wants, as it stands, some definite terminations or enclosing lines. The figures are beautifully modelled, and full of intellectual interest. Fortitude, which occupies the centre of the group, and whose head towers above the rest, is represented by a knight in armour, holding his lance, and resting one hand on his shield. It is a very fine and expressive figure. Justice is blindfolded, and holds the conventional sword and scales. Sympathy is expressed by a nude and dejected-looking damsel, to whom a bramble is closely clinging. Industry holds a beehive, and Brotherhood is represented by seated figures of an English labourer and a half-clad savage, who occupy the end arches of the series. The bronze is brightened, and the prominent parts of the work emphasised with gilding, and a few bright-blue stones sparkle in the background.

RAILWAY COMPANIES are, as a rule, far from particular as to the sanitary arrangements and condition of the buildings which they erect under the powers of their respective Acts. They are disposed to think that, under cover of their Acts, they are not amenable to the by-laws of the Local Board or authority, whatever the character or purpose of the buildings which they erect. The London Railway Companies are in the habit of building cottages for their men on their own land, generally near some suburban station; and there are numerous instances where those companies have never deposited plans with the Local Board, and where they have in other important respects completely ignored the requirements of the building by-laws in force in the district. They are, no doubt, exempted from these requirements in the case of "buildings used for the purposes of the railway," such as stations, offices, and sheds; but it cannot be fairly said that rows of workmen's cottages, though built on railway land, are "for the purposes of the railway," and therefore exempt from supervision under the local by-laws. Mr. Bridge, the magistrate, gave what appears to be a sensible decision on this point in a case which occurred some time ago at Hammersmith. He held that such cottages as those indicated were not exempted buildings under the railway company's Act, and that the by-laws in force in the district must be complied with. The Acton Local Board have, we notice, raised the same question against the London and South-Western Railway Company, which has erected some workmen's dwellings on its own land in the parish of Acton, without depositing plans with the Local Board. The latter is, therefore, officially ignorant of the mode in which these cottages are built or drained. The principle involved is a most important one, because it should not be in the power of individuals or companies to entirely exempt themselves from the provisions of the local by-laws, sanctioned by the ruling authority under the Public Health Act, 1875, viz., the Local Government Board.

THE movement for the construction of new waterways is already beginning to bear fruit, and it will not be very long, probably, before the Midland and other Railway Companies begin to find it out. An extensive coalition has been formed amongst the mercantile communities of some of the most important West Midland towns, with the object of placing Birmingham in direct communication with the sea. To this end the proprietors of the Gloucester and Sharpness and of the Birmingham and Worcester Canals, have joined forces with the municipal corporations of Gloucester, Birmingham, Wolverhampton, Kidderminster, Stourbridge, Worcester, &c., and there can be no doubt but that this formidable array will carry everything before it in the way of opposition. The present Sharpness Ship Canal is to be extended, so to speak, by carrying it to a mouth five miles lower down the Channel, the effect of which will be that vessels of 2,000 tons will be able to enter at any tide, and go direct to Gloucester. Great alteration and improvement will also be made in the canal from Gloucester to Birmingham, so that probably a considerable portion of traffic may be taken into the heart of the Midlands direct. The expenditure on the whole scheme is estimated at a million and a quarter.

ON the recommendation of their Law and City Courts' Committee, the Corporation of London have established a fund wherewith to maintain the open space at Kilburn which has lately passed into their charge. This fund is derived from a residuary bequest to them of the late Mr. William Ward, of The Lawn, Brixton Hill. Mr. Ward, in his will, provides for the benefit of "the poorer classes." The civic scheme formed the subject of a Chancery suit, wherein Mr. Justice Chitty

overruled the Attorney-General's objections that it did not strictly apply to those whose advantage the testator specifically intended to promote. The scheme, as sanctioned by the Court, is at present limited to the land at Kilburn, but powers are given for the framing of a subsidiary project to extend to the Highgate Woods, as lately taken over by the Corporation, in the event of the income proving to be more than is requisite for keeping up the Kilburn property. The Mercers' Company have undertaken to subscribe 150 guineas to the Bishop of St. Alban's scheme, if accomplished, for the purchase of the Pavilion Gardens at North Woolwich as a place of recreation for the inhabitants of West Ham and Silvertown. The Gardens, extending over 12 acres, have a frontage of 1,000 ft. along the riverside, and are set out in the first sheet of the Surveyors' District Map which we issued to our subscribers in January last.

UNTIL 1805 an ancient timber-built house, having stone chimneys on the ground-floor, and massive beams of oak and chestnut wood, stood in Gresham-place, a mean court opening out of Sweedland's-passage (corruptly known as Sweeting's or Sweedon's passage, and Sweed's-court), that joined Moor-lane with Grub-street. Remarkable for a prominently projecting staircase, that quaint structure, together with its neighbours, Prince Rupert's Palace in Beech-street, and General Monk's house in Hanover-court, supplied a favourite subject to illustrators of a past style of domestic architecture; as witness the drawings of J. T. Smith (1791), T. H. Shepherd (1800), and others. Whilst scarcely old enough, in itself, to justify the tradition that would claim it as a home of Whittington, this house may very well have been, as the story goes, a relic of that which was occupied some 150 years afterwards by Sir Thomas Gresham, *temp.* Queen Elizabeth. At that time, by the way, Grub-street lay on the outskirts of the town. A stone set in the face of one of the three now dismantled tenements which arose on the site is thus inscribed, in defiance of all chronology:—

GRESHAM HOUSE
Once the Residence of
SIR RICHD. WHITTINGTON
LORD MAYOR 1314
Rebuilt 1805.

"1314," *sic*, on the stone. In London guide-books and catalogues, &c., the date is commonly misquoted as "1406." Our *Flos Mercatorum*, however, was mayor in the years 1397, 1406, and 1419. But since the rebuilding of 1805, the quondam home of Foxe, Speed, and Dr. Johnson's friend, John Hoole,—the quarter which Marvell was the first to stigmatise,—has changed its name for Milton-street, albeit not so, be it noted, in memory of the poet, who died in what was formerly Artillery-walk, hard by. Sweedland's-passage and Butler's-alley have lately given place to Butler-street, and the three small houses we indicate are now being demolished to make way for yet more of the large business premises that arise all round. Still, there remain in Milton-street, on its western side, two plaster-fronted houses which were coeval with the sorry times when Pope identified authorship with misery, squalor, and gin.

SOME very interesting facts and figures were stated at the last meeting of the Mansion House Committee of the Imperial Institute, as to the great value of sites in the metropolis. The Governor of the Bank of England said that, in their hunt after a site for the Institute they had found that the land for the new Admiralty would cost 160,000*l.* per acre, the Charles-street site is estimated at 250,000*l.*, an acre at Charing-cross at 224,000*l.*, the site at the Embankment (Blackfriars) 400,000*l.*, and the Christ's Hospital site at 600,000*l.* These are stupendous figures, and bring before one more forcibly than anything else the greatness of London. It is allowed that 300,000*l.* would buy the best site in London for the Institute, and although this is of course a large sum, it is as nothing compared with the magnitude and importance of the scheme, or with the riches of London. Moreover, the Lord Mayor, while accepting the South Kensington site, acknowledges that there must be a supplementary commercial museum or museums in the City, thereby unconsciously showing that the Institute cannot be fulfilling its proper destiny if located at South Kensington. An exhaustive museum is half the scheme, and even that will have to be established at great cost in the city. There either appears to be a failure to realise the possible grandeur of the whole thing as Imperial, or else the financial glamour of the various exhibitions is permitted to exercise undue sway.

THE Chapel of St. Mary Magdalen, at the Brompton Oratory, has just been decorated, under the direction of Mr. J. Cosgreave, who has designed much of the decorative work in the church. Gilding has been used with that lavishness which usually produces the extreme either of vulgar gaudiness or of rich beauty, and the effect in this instance is decidedly good, assisted as it is by some beautiful plaster work by Messrs. Jackson. Some of the Italian marble work in the walls is very rich and effective, but the architraves and pediments of the doorways, which looked well in wainscot, are poor and cold copied in grey marble.

MR. AXEL H. HAIG'S new etching of Limburg-on-the-Lahn, now being exhibited at Mr. Dunthorne's gallery, if not quite superior to all his other works, has all the old charm for those who believe in the capabilities of architecture for becoming the theme of a picture. The picturesque cathedral of St. George stands in the full sunlight on the edge of the cliff overlooking the river, and is contrasted with the dark mass of the buildings on the hill in the shadow to the left; in front is the river, and a mill, also in strong light; on the right are some dark trees; the glimpse obtained between these of the bridge and the country beyond is one of the best bits in the whole composition. The figures in the foreground are pretty, but a little too conventional.

THE *Illustrated London News*, in its column devoted to "Art and Archæology" last week, referred to the sacrifice of many historical and art associations which the making of the new street from Charing Cross to Tottenham-court-road, has involved,—associations some of which, by the way, were descanted upon in the *Builder* for June 26, 1886, p. 935. After mentioning the names of Hogarth, Sir James Thornhill, Burke, Reynolds, Johnson, Sir Thomas Lawrence, and others, our contemporary says:—

"We most cordially associate ourselves with more than one of our contemporaries in entering a protest against the name proposed to be given to the new thoroughfare. If from amongst the names already cited (not one of which, we believe, is in any way connected with any of our streets or squares) it is not thought expedient to select one to keep alive the memories of the past, then the title of Nelson-avenue seems to us a singularly effective and proper appellative for the new street. It is strange that, although there are two Trafalgar-squares in Western London, Nelson's own name is only connected with a somewhat dingy square and noisy street in Southwark,—as if Englishmen had been eager to profit by his successes, but were unwilling to recognise the man who achieved them. There seems, too, something which touches our sense of fitness to place beside Shaftesbury-avenue a public thoroughfare which recalls that, not only in war but in peace, England expects each man to do his duty, and honours him for having done it."

As the proposal to name the new street "Nelson-avenue" first appeared in our columns we are very glad to find that we are not alone in the view we took, and still hold, that the name "Charing Cross-road" is not a good one, and we hope to see it altered, in spite of the fact that, as all the newspapers inform us, the new street was last Saturday formally "dedicated to the public for ever by the name of 'Charing Cross-road.'" The Metropolitan Board of Works is not always happy in deciding on questions of street nomenclature, as we have had to point out on several occasions, notably when they proposed to call the new street from Bloomsbury to Piccadilly-circus by the absurd name of "Piccadilly-road." We protested against the unsuitability of such an appellation at the time, and suggested the name "Shaftesbury-avenue." We had the satisfaction of seeing our protest and suggestion re-echoed by the press, and ultimately, though not without much discussion, the Board abandoned the name "Piccadilly-road" in favour of "Shaftesbury-avenue." The appellation "Charing Cross-road" for the thoroughfare opened last Saturday will be attended with many inconveniences.

LETTER FROM PARIS.

WE have been much occupied with a new fight about the Eiffel tower. A number of artists and literary men well known to the public, and nearly all members of the Institut, have made a collective protest against "l'odieuse colonne de tôle boulonnée," which quite represents the general feeling on the subject, but which has unfortunately come too late; and though the protesting party are entirely in the right, they couched their remonstrances in a tone somewhat too solemn for the occasion, and which has excited the raillery of M. Lockroy, the Minister of Commerce, who replied to it in a satiric style, amusing enough in itself, though not quite in keeping with the dignity and responsibility of his office. M. Garnier, one of the signers of the protest, has replied on his part with equal energy and irony; but things remain as they were. M. Garnier has consented to remain consulting architect for the Exhibition, and the protesting party, in spite of their well-turned sentences, have to await in resignation the arising of this new tower of Babel, from its foundations to the ordained height of 300 mètres, whence, like a morning star, it is to shed

"Des torrents de lumière
Sur ses obscurs blasphémateurs."

For the moment, work is in full activity. For each one of the four piers of the tower a quadrangular excavation, 31 mètres square, and 4½ mètres in depth, has to be made; which lays bare the gravel stratum on which the *béton* will be run. Two hundred men are at work on these excavations, which will probably be terminated by the end of the month. On the neighbouring site of the École Militaire, where the machinery gallery is to be erected, 410 pits of 3 to 8 mètres deep have been sunk, 300 of which are already filled with concrete. Lastly, in the midst of the Champ de Mars, there extends a huge cutting intended to receive 4,000 square mètres of masonry footings. The important question of the lighting of the exhibition is at present under consideration. According to the scheme of M. Georges Berger, the lighting of the Champ de Mars enclosure will be carried out by a kind of syndicate of all the French and foreign electricians, and he is contemplating an illuminating power for this area, equal to about five times the whole of the Paris gaslighting power. The "Exposition des Eaux et Fôrets," which was of such interest in 1878, will be arranged on the left slope of the Trocadéro Gardens, while the right slope will be set aside for the Ministry of Public Works, which proposes among other things to erect a great lighthouse. The rest of the Trocadéro Gardens will be for the exhibition of the National and Central Horticultural Society of France. We may just note here, proposing to describe them more in detail afterwards, that various novel projects are spoken of, such as "trottoirs roulants," flying bridges, electric and rope railways, &c.

But though industrial Paris looks with hope to the exhibition as a promoter of work, artistic Paris is deeply concerned at the loss of its annual central place of exhibition in the Palais d'Industrie, which piece of State property, long lent for the annual *Salons*, must now be utilised for the purposes of the Exhibition, and the artists will have the enjoyment of it no more after 1888, after which they must look out for some other locality, which it will be very difficult to find.

Meantime, various exhibitions are being organised on this site, which the "Société des Femmes Peintres et Sculpteurs" is now occupying with its creditable mediocrities. On August 15th will be opened there the second exhibition of decorative art, which will last till November 25th. In regard to the Musée des

Arts Décoratifs," an important step has been taken since our last letter. Thanks to M. Antonin Proust, Parliament has been occupying itself with the matter, and the Musée is to become, after a lapse of thirty years, the property of the State, in exchange for the giving up of the ancient Cour des Comptes. This arrangement, hardly the best in regard to economy or to the real interests of industrial art, will, at least, cause the disappearance of those ruins of the Communist war which have given such a sad aspect to one portion of modern Paris.

Of Government work now in progress, besides the Musée Guimet (of which we have already spoken, and the sculptural decoration of which is commenced), the "Direction des Bâtiments Civils" is occupied with the completion of the portion of the Bibliothèque Nationale which faces the Rue Richelieu. A monumental gate of bronze, executed from the designs of M. Pascal, architect, will shortly give access to the principal court, the decorative treatment of which is carried out on the lines of the old Hôtel de Nevers. It is to be hoped that funds will be forthcoming for commencing at last the projected buildings facing the Rue Vivienne, which will complete the great quadrangle of the national French library. The new arrangements at the Louvre are still in progress, and the gallery of Egyptian antiquities will be shortly opened, as well as the "Gallery of the Colonnade," as it is called.

The Government is now apparently occupying itself seriously about the monument commemorative of the Revolution, which has been the subject of so much discussion for the last two years. The new Ministry of Fine Arts is about to nominate a special committee to consider the project and to bring it before Parliament as soon as possible. The project will give rise to a public competition in sculptural and architectural design. There is, however, many a slip between cup and lip in these matters, and it may be observed that the monument proposed to be erected at Versailles, in honour of the National Assembly, has never gone any further since the jury awarded the premiums for the best designs seven or eight years ago. The State, in fact, shows much less zeal in artistic matters than the Municipality, which, besides, has the well-earned reputation of paying much more generously than the State; and thus we have an almost unbroken record, from month to month, of new artistic efforts on the part of the City of Paris, which are highly appreciated by artists.

This month the second stage of the competition for decorating the Mairie of Pantin, of which we have already spoken, has been decided. In the first competition three artists, M. François Lafon, M. Henri Lévy, and M. Schommer, had been selected to compete with cartoons the size of the work to be executed. M. Schommer has been successful. His composition, intended for the ceiling of the grand staircase, represents Alsace, under the guise of a young woman clad in the costume of the country, the standard of France unfolded at her feet. Above her is a winged figure symbolising France. M. Henri Lévy, whose high talent has been often proved, especially in his work at the Pantheon, has been unsuccessful here, and his rather tame and colourless allegory has had to yield place to M. Lafon's commonplace idyll, an Arcadian country scene, quite out of place in prosaic Pantin. The result of the matter is that M. Schommer will decorate the grand staircase and the Salle des Fêtes of the Mairie, at a cost of 36,000 francs. M. Lafon will have the Salle des Mariages, M. Lévy the Council Chamber, and the two latter artists will receive a sum of 8,000 francs each, in addition to the premiums awarded. The Municipality is also about to undertake the decoration of the new Salle des Fêtes constructed by M. Ginain for the Mairie of the Sixth Arrondissement, and several mairies in suburban districts will be the objects of similar projects.

Whether we shall now have the question of the decoration of the Hôtel de Ville settled is a matter of speculation. The Council must do something about it before they separate in May; and there is a difference of opinion as to whether there should be a public competition or direct commissions to selected artists. The Fine Arts Committee of the Council leans towards the latter course, which we are disposed to think is the best in order to obtain designs entirely in harmony with the building. The committee proposes to select for treatment subjects connected with the history of Paris, the freedom of the Communes, the life of Étienne Marcel, and sundry great events of the Revolution. No objection can be made to this; such subjects will certainly offer more of interest than the used-up cycle of mythological allegories. As to where the commencement of the work is to be made, nothing is yet decided, although some important inaugural celebrations are already under consideration, and for the first ball at the end of March, for which 5,000 invitations will be sent out, it will be necessary to mask the want of decoration by tapestries and other temporary expedients, which will necessitate an immense expense.

The statue to Louis Blanc was inaugurated on February 24, the anniversary of the revolution of 1848. As politics do not enter into our *métier*, we may pass over in silence the more or less anarchist manifestations which saluted the work of the sculptor Delhomme, of which we have before spoken. By the time this letter is published there will also have been inaugurated at Père-la-Chaise cemetery the new crematorium, built from the plans of M. Formigé, and which is provisionally to be used at present for the destruction of hospital *débris*.

Another novelty to be shortly opened is the new panorama of the battle of Rézonville, by M. Détaille, which succeeds to that of Champigny, painted by the same artist in collaboration with the late M. de Neuville.

One of the municipal schemes that may be mentioned is the reconstruction of the Temple of the Sibyl in the Park des Buttes Chaumont. The work, which has presented a good many difficulties, is just completed, and the fine promenade adjoining the temple is again open to the public.

M. Tony Noël, whose fine decorative sculpture for the Mairie of Neuilly has been illustrated in the *Builder*, has been appointed a member of the Senior Committee of Instruction at the École des Beaux Arts, in place of M. Delaplanche, who has been nominated a professor in the same institution.

The competition in the section of architecture at the École has now been decided. The subject given was "a hippodrome." From among forty-four designs submitted, the jury have given the first medals to MM. Conier and Chedanne, pupils of M. André; the second to M. Astruc, pupil of M. André, and to MM. Desnos and Malgras, pupils of M. Ginain. Eighteen designs have received honourable mention. In the sketch design competition (subject, the ceiling of a gallery), the first medal has not been awarded. M. Gérard, pupil of MM. Daumet and Girault, and M. Schaltenbrand, pupil of M. Guadet, have received second medals; and M. Eustache, pupil of M. Ginain, has obtained honourable mention.

At the Institut, M. Chaplain, the eminent medallist to whom we owe the splendid medal commemorative of the Hôtel de Ville, has been chosen President of the Académie des Beaux Arts for 1887. M. Chaplain has also been appointed by his colleagues to go to Brussels to model the portrait of the Duc d'Aumale, whose profile is to figure on the medal to be struck in memory of his generous gift of the domain of Chantilly.

The exhibition of the artistic club called "the Mirlitons" contains a sufficient number of interesting works executed by genuine artists, pretty well drowned in a sea of amateur works. Of these latter we will say nothing, confining ourselves to the mention of two fine portraits by M. Carolus Duran, and two others by M. Eliè Delaunay. The Water-Colour Artists' Exhibition, in the Rue de Sézes, is of a very different order; and here the public at least obtain, as the phrase goes, something for their money. The only complaint one can make against the Society is that of not having been firm enough in adhering to their principles, and having the last year or two opened their doors to rather too large a number of works. Nevertheless, there is always a sufficient number of works of the highest class to attract and interest the discreet visitor. The success of the exhibition, as usual, belongs of right to the remarkable works exhibited by MM. Français, Detaille, Vibert, Harpignies, Maurice Leloir, François Flameng, John Lewis Brown, and, lastly, by M. Eugène Lamy, that octogenarian who remains eternally young, and whose compositions show all the same brilliancy and vigour as those of forty years ago. Among the lady exhibitors, the landscapes of Mdme. Nathaniel de Rothschild divide the honours with the flower and fruit paintings of Mdme. Madeleine Lemaire.

M. Besnard deserves a word of special mention for his exhibition, which contains above forty works, including a good many portraits finely studied and exquisite in colour. There are unfortunately some water-colours more remarkable for eccentricity than for real success; but the whole collection is the work of an artist of real genius whose eccentricities even are not without their interest.

MORE ABOUT THE EDINBURGH MUNICIPAL BUILDINGS COMPETITION DESIGNS.*

WHETHER it be due merely to the local circumstance that Edinburgh is popularly known as "The Modern Athens," or whether it is to be accepted as further evidence of a general return to Classic architecture, certain it is that Gothic architecture has had but few exponents in the competition for the proposed new Municipal Buildings, and these, as a rule, do not approach the highest standard of excellence. To this statement, however, exception must be made in favour of the design under motto "Quien Sabe!" which is by far the best rendering of Gothic submitted in the competition, and a design in which the style is treated throughout in a manner peculiarly suited to modern civil requirements. The particular phase of the style selected is termed by the authors "The Scottish Palatial Gothic of the Fifteenth and Sixteenth Centuries, as exemplified in Falkland and Linlithgow Palaces, Stirling Castle, and other Scottish edifices. Its prototype, more fully developed in Spain, has in this design been drawn upon for a lighter character to the fabric, and greater variety of detail." The elevation to Cockburn-street is very imposing, and shows a large square central tower with two smaller ones at the corners, octagonal on plan. All three are finished with short spires whose surfaces are divided into panels enriched with pierced tracery. The High-street front is also well disposed; the treatment of the gables in the east and west elevations is particularly clever, and the interior of the quadrangle has some most excellent work. The windows throughout are very rich, with thick mullions and elaborately traceried heads. The plan has the buildings round the four sides of a quadrangle, with the Council suite on the first floor of the north wing. The arrangement of this part has not a little dignity, but there are some doubtfully-lighted corridors and other defects visible in the planning. The estimated cost is 151,000*l*.

Another Gothic design of considerable ability is that under motto, "For Queen and Country." A late phase of the style (fifteenth century) has been chosen; the masses are well disposed, and if carefully detailed would turn out well. The Cockburn-street front has a central gable, and two side gables, each divided by narrow buttresses into three bays. All three bays of the central gable have oriel windows carried through three stories, the side gables an oriel in the centre bay only. The High-street elevation is somewhat similar in disposition, steep-pitched gables divided into three bays terminating the east and west wings, while a higher gable, divided into three bays with oriels, and a square tower rising up behind, form the central feature of the courtyard. On plan, this courtyard is 90 ft. broad and 60 ft. deep, measured from the building line of High-street, with two small courtyards behind lighting staircase and corridors, somewhat akin to the arrangement of "Nineteenth Century." The City Chamberlain is placed on the ground-floor of the north wing, the Council Chambers on the first floor of the north wing, with the Town Clerk on the same level, in the west wing. The internal arrangement of the Council suite is lacking in dignity, but the plan has many good points. "Aiblins" is the motto of another Gothic design of some merit, but of earlier (thirteenth century) type, and more restrained treatment. The plan is irredeemably bad.

"Scotia."—The High-street front of this design has a charm quite its own, arising from the quaint disposition and treatment of its door and window openings, and the skilful combination of horizontal cornices and string-

* See p. 311, *ante*.

courses with the vertical lines of pilastered buttresses and gables. While full of sympathy and harmony with its intended situation in the heart of Midlothian, the design is hardly important enough for the Municipal Offices of the Capital of Scotland. A central tower, not very happily managed, is flanked by buildings of two stories and attics, with niches and statues between the first-floor windows. The ends of the frontage are composed with triple gables, divided by pilastered buttresses. The other elevations are also of considerable merit, but the plan does not call for any special mention.

"Tannahill."—In this design the author says,—"No attempt has been made to imitate any special 'style,' except so far as in the adoption of some details derived from Mediæval Scottish architecture, but even those mostly with a good deal of modification." The result is a design of marked originality, showing considerable thought and individuality, but which, with all its cleverness, looks much better in the excellent drawings by which it is illustrated than it would ever do in execution.

"Waverley."—The design (No. 1) submitted under this motto is deserving of notice, not only from the merit of its architecture and the quality of the drawings, but also from a striking peculiarity in its plan. The buildings are arranged round three sides of a courtyard, as so many others are, but in this instance the open end is to the north, not to the south, as in every other case. The south wing extends along the building line of High-street, and the east and west wings run northwards from this, their ends being occupied by semicircular staircases rising from the Cockburn-street level to the top floor of the building, with passenger lifts placed in the wells. The three wings or blocks being double, *i.e.*, with rooms on each side of the corridors, the lighting of the corridors is at various places more than doubtful. The elevations are in the style of the French Renaissance. Towards Cockburn-street the wings are carried up to a considerable height, and are connected for some distance above their base by a screen of lower buildings. Behind and above these are seen the gables of the back of the High-street block, with a great central tower rising above all. The grouping of the masses from Princes-street would be most effective, while the sheet of details exhibits an intimate acquaintance on the part of the author with the style chosen.

"Edina" is the motto of another design in the same style, handled with much less skill. The plan is cumbersome and bewildering.

"St. Giles."—Either as the result of a curious coincidence, or as the product of the same author, two designs are submitted under this motto, in which a similar type of plan has been adopted and that different from any other yet referred to. The principal entrance from High-street gives access to a long covered court or hall running north and south, with galleries all round at the different floor levels, giving access to the surrounding apartments. The Classic design (No. 45) is both in plan and external treatment superior to its Gothic brother, No. 56, the three great gables with open arch and balustrade between in the Cockburn-street elevation of the former being a most effective feature, while the arrangement of the Town Clerk's and City Chamberlain's offices and of the Council Chambers is particularly good.

"Heart of Midlothian."—This is a design which might have been expected to appeal in a special manner to Mr. Waterhouse had that gentlemen been influenced at all by elevations in making his selection, while the plan is not without a great deal of merit.

"Waverley" (with thistle within a circle).—The municipal buildings in this plan are confined to a rectangular space, 210 ft. from north to south, by 170 ft. from east to west, the Clydesdale Bank being entirely isolated in a separate building placed at the eastern extremity of the High-street frontage. The plan has been arranged with considerable dignity in the matter of entrance-halls, ante-halls, grand staircases, and corridors, but too much has been sacrificed for this, and the working departments are not arranged with a single eye to carrying on business in the most efficient manner. For example, there is a distance of fully 120 ft. between the door of the Town Clerk's own room, and that of the public office of his department, the communication between the two being by a corridor quite open to the public.

"Rob Roy" sets the main portion of the High-street block 25 ft. back from the east and west wings, which project forward to the building line, and in this point improves upon other quadrangular plans, which keep the whole south block forward to the building line. The court in the centre of the site is of irregular shape, and gives light only to staircases, corridors, and lavatories, the offices being lighted to the outside of the square. The Council Chambers occupy the High-street block on the second-floor level,—a height to which few other competitors have cared to raise them. The official departments on the first floor, those of the Town Clerk, City Chamberlain, Burgh Engineer, Dean of Guild Court, &c., are well arranged in relation to each other and the work to be carried on within them. The elevations are somewhat commonplace, securing their effect rather by bulk than originality; but the large-scale drawing exhibits a correct knowledge of Classic detail.

Crescent upon Shield.—The design bearing this device is the only one submitted in competition which purposes to utilise the existing buildings, and on this account Mr. Waterhouse called attention to it in his report. It may be enough to say of it that it either goes too far or not far enough. 50,000*l.* is too much to spend on patching up an old building without obtaining a satisfactory result, especially when designs are submitted in competition and recommended by the professional assessor for an entirely new building, arranged exactly as the requirements of official business dictate at a cost little more than double that sum.

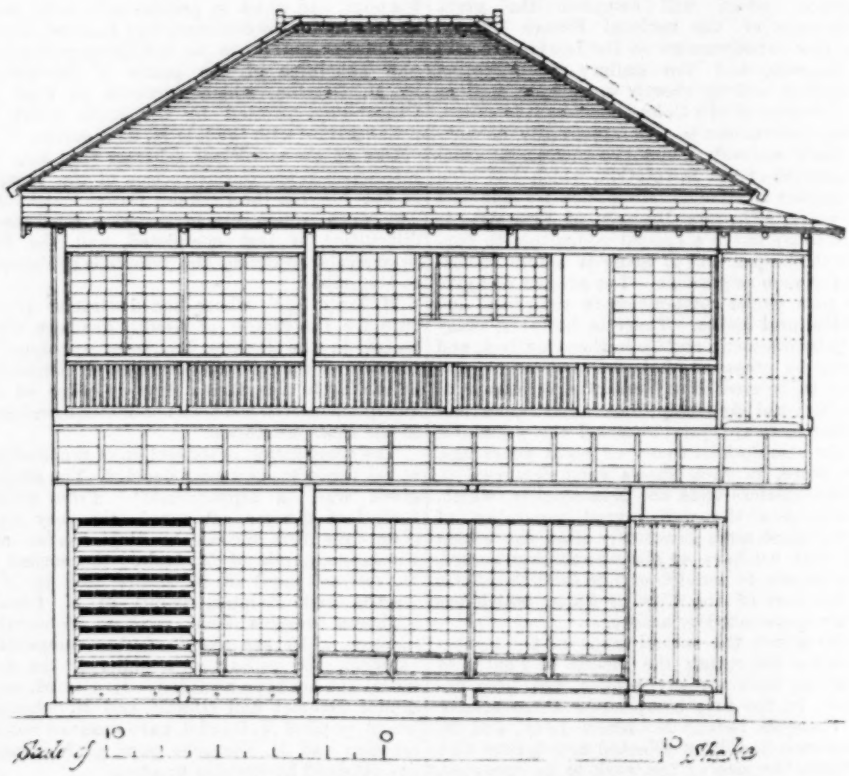
Other designs of considerable pretension and more or less merit are "Finis coronat Opus," "Line upon Line," "Heriot," "St. Andrew," "In my Defence" (No. 12).

Taking a general survey of the drawings, after a careful examination of each individual set, one returns with satisfaction to the plans recommended by Mr. Waterhouse. For systematic setting out, convenient and dignified arrangement, and efficient lighting, they are not equalled in the room, while the elevations of "Nineteenth Century," "Ora et Labora," "Fortuna," "N. D. I. V.," and "Fiat" are welcome assurances that, with all the striving after novelty and cheap superficial effect which the spirit of the age tends so much to develop, there are some among us who still understand and value the breadth, solidity, and nobility of true Classic art. It is at the same time to be regretted that there have not been submitted, in conjunction with a first-class plan, elevations in which full advantage is taken of the grand possibilities of the French Renaissance, the style, above all others, pre-eminently suited for the proposed building, with its site and surroundings.

JAPANESE ARCHITECTURE.

At the meeting of the Royal Institute of British Architects on Monday evening last, Mr. Waterhouse, R.A., Vice-President, in the chair, Mr. Josiah Conder (as elsewhere mentioned) read a paper on "Domestic, Civil, and Palatial Buildings in Japan."

In describing the domestic architecture of Japan, the author should, he said, have occasionally to allude to certain habits of life pertaining to the people of that country; some of them the natural results of climate, many of them closely associated with romantic tradition, but not a few belonging more to the passing than to the modern type of civilisation. In Japanese houses separate rooms are not set apart for distinct and particular household purposes, as is the case in European dwellings. The bedroom, as a distinct apartment, can hardly be said to exist in the ordinary dwellings. As a general rule, any room is converted into a bedchamber by spreading sleeping quilts and pillows upon the matted floor. During the daytime such bedding is secreted in spacious closets arranged between the walls of the

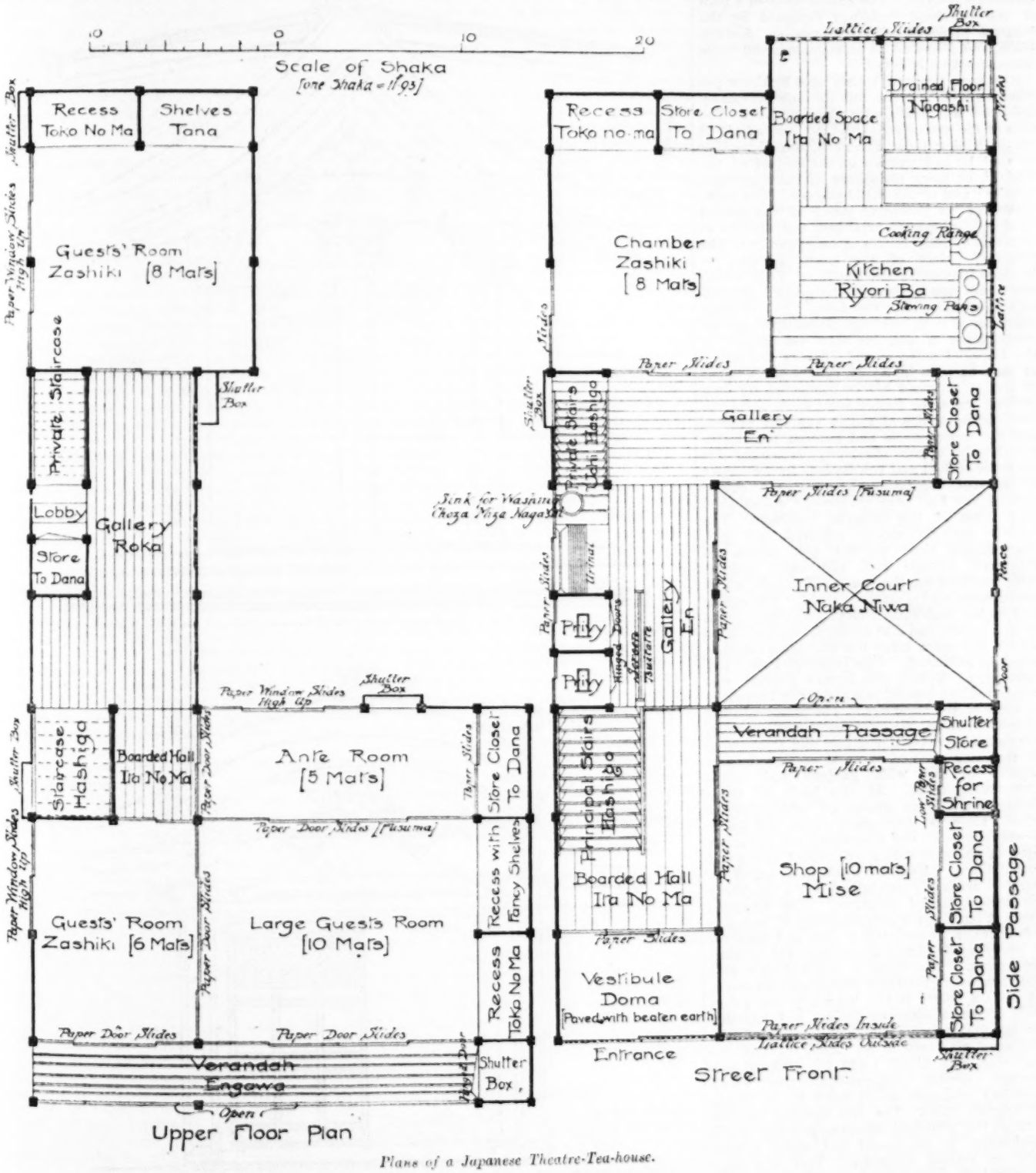


Front Elevation of a Japanese Theatre-Tea-house.

different rooms. The Japanese make constant use of the hot bath, and all the best houses are provided with a bath-room. The usual time for taking the bath is the afternoon or evening, so that the morning ablutions are simple, and are conducted, not in the sleeping apartment, but in the lavatory, or in some cases, even at the well-side in the garden or kitchen court. Privies are provided at the end of the verandah passages, and just opposite to them, in the garden, is invariably an ornamental water-basin provided with a ladle. The mats called *tatami*, used to cover the floors of all living-rooms, are of the fixed size of 6 ft. by 3 ft., and rooms are described by the number of mats that they contain. Passages, verandahs, part of the kitchen, and the closets are boarded, such boarding quickly assuming a natural polish from the daily rubbing with wet cloths which it receives. Food is served to the different rooms upon small trays, one to each individual. In winter large metal-lined boxes, or bronze vases of live charcoal, are placed in a room when in use, and in summer smaller fire-boxes are provided for lighting the pipe at. The candlesticks or lamps used at night, one or two chests of drawers, small low tables for writing upon, boxes containing paper and ink, little shelves for the cups, and occasionally, in the most luxurious dwellings, a small lacquered cabinet and a screen or two, complete the furniture of an ordinary house. In every house, one room or more will be provided with an alcove or recess, called *tokonoma*, and a corresponding recess, occupied

either by ornamental shelves, or by a closed store closet.

The general mode of living in a Japanese house being understood, it would be easier, the author said, to appreciate the different arrangements which the builders have produced for administering economically to such wants. He showed a drawing of a small middle-class house, and another of a somewhat larger one-story building, formerly occupied by a private gentleman of the upper class. The former contains a vestibule, a small three-mat ante-room, one large seven-mat room, another room of six mats wood, having some quaint pattern cut through, free or conventional. The other drawing shown was a good example of the best class of house, secondary only to the large summer pavilions of the nobles and their old feudal mansions. The approach is under a porchway, paved with cement, having a high wooden step leading to the enclosed matted hall, four mats in area. At the side of this hall is a three-mat room for domestics, with large and small closets. The hall opens into a small inner hall or lobby of two mats, communicating with one of the principal sitting-rooms of four smaller rooms, one eight-mats, and the others six-mats in area; of this group one has a *tokonoma* and *todana*, or closet, and the others closets only. At the back of the whole residence is an oblong block containing a large store and two small rooms for female servants, with separate entrance. As is almost invariably the case in the best houses, the principal rooms form an internal angle or L-shape towards the garden, which is generally on the south side of the building. The whole of this side has a boarded verandah with a latrine at the end. Other conveniences are provided,



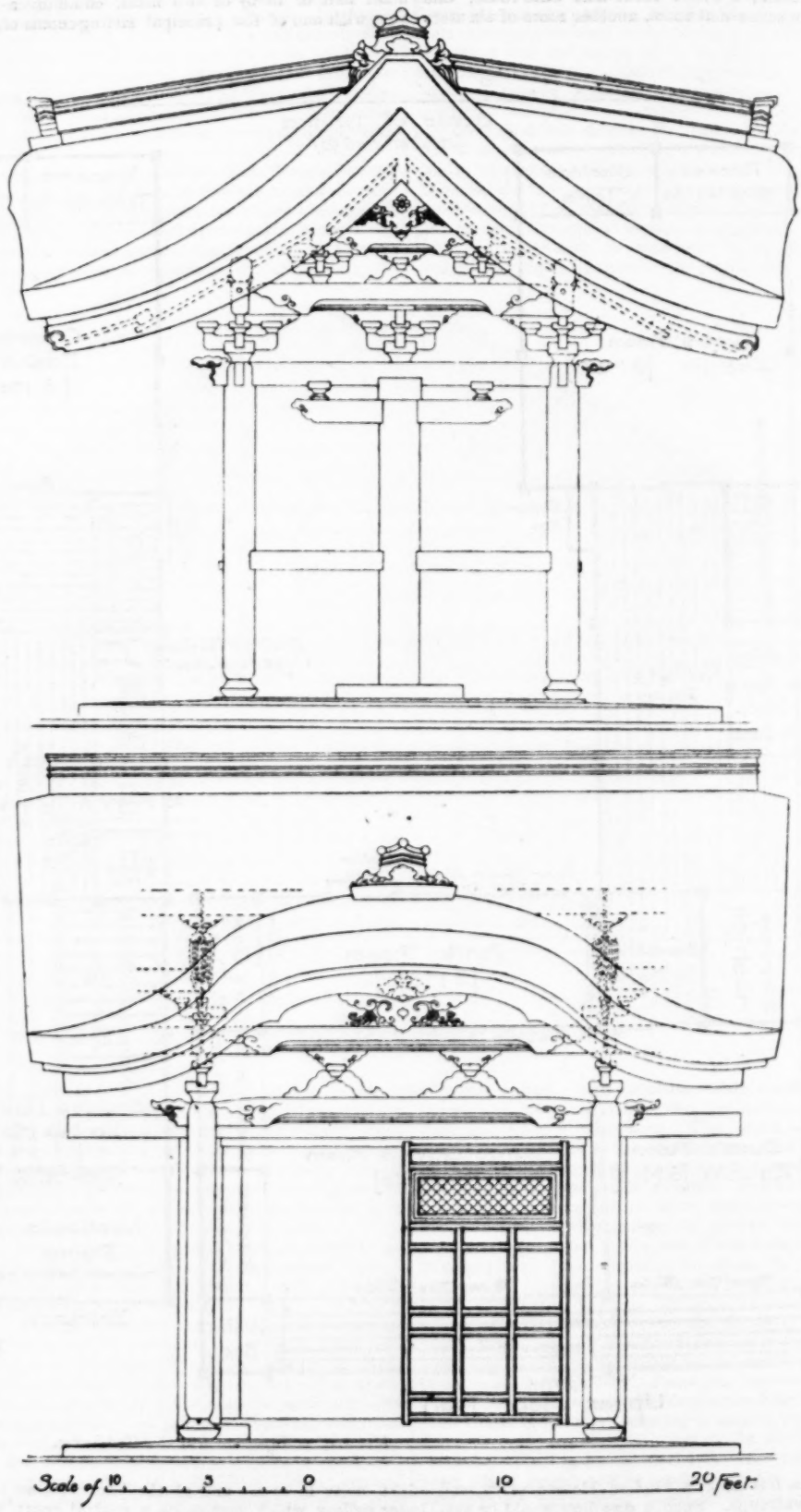
Plans of a Japanese Theatre-Tea-house.

with a *tokonoma*, a kitchen, closets, privy, and back entrance. Such a dwelling would be surrounded on two sides by a little garden containing a few shrubs, evergreens, stones of irregular shape, perhaps a stone garden-lantern, and a hill or two. A small miniature pond might also be introduced. The whole would be surrounded by a garden-fence, entered through a picturesquely-roofed wicket-gate. The internal constructional woodwork and the boarded ceilings of such a house would be carefully selected, and some pale neutral tint would be given to the plastering. The *ramma*, or frieze space, would be filled in with thin planks of clean eight mats in area; and at the back with an inner gallery which surrounds a central court or garden. On the right of this garden is a wing containing kitchen, servants'-hall, and bath-room; and this wing, towards the front, adjoins the room devoted to hall servants, though somewhat set back from the main frontage of the house. Beyond the eight-mat room mentioned is the principal room of the house, fifteen mats in area, and decorated at the further end with an ornamental recess (*tokonoma*), and decorative shelves (*tana*). Behind this room, and forming a group on the further or west side of the inner garden, are one near the bath-room, and one at the back of the further block. A house such as this would be provided with an extensive garden on the south and west sides, and a small garden of different character in the internal court or area. The style of garden employed within would be what is called the Hake-niwa, a flat garden of beaten earth, kept slightly damp and cleanly swept, dotted with quaint paths of stepping stones, and rather thickly planted with low trees and shrubs. The outer garden would be of more free and open character belonging to what is called the *Sansui* type, a word implying mountain and water scenery; gardens in this

style being designed to suggest some natural landscape.

The refined Japanese gentleman of the old school will generally boast some acquaintance with the philosophy and ceremonial of tea-drinking, and will adorn his grounds with one of those curious little buildings, called *Chashitsu*, intended for the preparation and enjoyment of this refreshing beverage, amid the hospitable formalities with which the pastime is surrounded. The construction of these buildings is in keeping with the tinyness of the arrangements, and the most exquisite care and neatness are displayed. The author showed a plan of one of these buildings designed by the greatest professor of the *Cha-no-yu*, Sen-no-Rikiu, and described its arrangement and mode of construction in detail.

Numerous types of houses used by the upper classes might be given, but the one previously described was sufficiently characteristic. The time at the author's disposal did not admit of his describing these at length, nor of reading all that he had written on the subject of the *Yashiki*, or town residences of the territorial nobility; and of the castle-palaces. The latter consist of an extensive group of one-storied buildings, compactly arranged, and divided at intervals by inner courts or small gardens. The principal palace of the latest *Shogun*, or Military Regent, in the Castle of Yedo, which was years ago burned to the ground, covered an area of more than two acres. The military character of such buildings necessitated greater compactness in planning than was adopted in the Imperial palaces; and whereas the latter, as may be seen in Kyôtô, consist of a number of almost detached blocks connected by long covered ways, the former were more under one roof, the succession of rooms was less broken, and the inner courts and gardens were introduced only where absolutely necessary for purposes of light and ventilation. In the matter of internal decoration, however, the castle-palaces are far more gorgeously embellished than those of the Imperial buildings. The *ramma* are elaborately coloured and gilt, the ceilings have painted silk panels and lacquered frames, and the only undecorated portions are the posts and lintels, which are invariably of plain white wood. The author said he had with some difficulty obtained a plan of this palace, and also of one formerly situated within the inner citadel of the same castle,—which he exhibited. The Imperial Palace still existing at Kyôtô, the former Capital, was illustrated by a general plan and several drawings of some of the buildings. The palace consists of seven principal blocks of residential buildings, connected by covered corridors and arranged in an irregular manner, so as to present the best aspects to the wide gardens and courts surrounding them. At the back of these buildings are large groups of administrative offices, kitchens, wardrobes, stores, and apartments for officials and domestics; and at various parts of the enclosure are fire-proof stores and outbuildings. A special block is arranged for worship, originally also intended as a repository for certain sacred treasures. The complete group of buildings is surrounded by an irregular oblong fence, constructed of clay and tiles set in heavy wooden framing and plastered between the frames. The fence is crowned by a wide and picturesque tiled roof with ridge ornaments. At certain points in the boundary are gates, each of some different design, and intended for special uses. The longer side of the enclosure measures about 2,400 ft., and the narrower side about 1,440 ft. Taking into account certain depressions, the whole boundary measures about 8,436 ft., or nearly 1¾ English miles. The first building reached through the principal entrance gateway is the Shishinden, or ceremonial hall, which is used only on special occasions. This is a large boarded hall, measuring about 100 ft. by 50 ft., with a wide corridor behind and recessed galleries at the sides. At the back it is connected with a passage leading to the Imperial chambers, and in front, towards the garden, has a broad flight of steps communicating with an exterior railed gallery. The court in front of this hall contains several storehouses for the Imperial cars, palanquin and other ancient utensils, and immediately before the threshold are two sacred trees, to which great antiquity is attributed. The next block reached is the Serioden, or Summer Palace, used only for special summer ceremonies, and not matted as all purely residential buildings are. The small chambers at the sides, used as retiring-rooms, are named mostly according to their decoration; thus there are the Wisteria Chamber, Lespedeza Chamber, and the Fiend Chamber. On the opposite side of the court separating this building and the Shishinden, is the Kogosho, or Small Palace, having its principal aspect towards a garden on the east side. The walls and slides are richly decorated in cream colour and gold, with paintings of landscapes and figures in pale colours, interrupted by cloud-shaped streaks of rich blue. The next block of rooms on the garden side is called the Gakumonjo, or Imperial study. A winding corridor leads from this block to the O-Tsunegoten, or Imperial residence proper, which is a large block of rooms, measuring about 60 ft. by 100 ft., and with a small corner block attached. It consists of fourteen rooms, arranged in an oblong block, and surrounded by a wide passage, and an outer gallery thrown open in summer time to the breezes. On the south side is a suite of three rooms, the floor of each successive room being raised above that of the other. The author then described the decoration of the wall spaces, ceilings, panels, and slides of the room contained in this block. Many buildings, he said, destined for far less important uses, are to be seen in Japan with gorgeously decorated ceilings; but a neat simplicity and elegance is all that these imperial chambers can boast. The other principal groups of rooms are the Sandaiden, the Norioden, used for enjoying the cool breezes in the summer time, and the Chosetsutei. This latter group was not shown on the plan exhibited, but the author had seen it, on the occasion of a personal visit. It is, in fact, a sort of summer-house, set apart for the purpose of tea-drinking, and in their miniature proportions and light



A Japanese Gateway.

construction these rooms are a true type of the Chashitsu, or tea clubs.

The whole of the Imperial buildings are, without exception, of one story only, and present very few striking architectural features on the outside. The roofs are of picturesque curve, though decidedly heavy looking, and are covered with thick layers of pine shingles. Terminals and ridges are executed in wood, covered with copper-plate, and with a little gilding in parts. The gables have bargeboards and carved pendants. The eaves, with the exception of those the Shishinden, have not the rich bracketted cornices generally found under them in temple buildings, but are much simpler.

The principal features of interest upon the exterior, are the elegant balustrades and handrails of the external galleries and staircases, and the wooden screen divisions which separate the verandahs into parts. The vista of interior rooms, always seen from the outside, attaches interest to an otherwise bare and monotonous elevation.

The author then referred to the summer pavilions used by the emperors and regents as temporary residences for retirement. They are of two or three stories in height, contain small painted chambers of great delicacy and beauty, and are surrounded by magnificent gardens. He then proceeded to describe some of the more important town buildings for the public use. Among the principal of these are the bath houses, tea houses, restaurants, inns, lodging houses, theatres, lecture-rooms, and dancing-rooms, most of which were illustrated by drawings, showing plans and elevations. These and the other buildings described were also illustrated by means of a numerous collection of photographs and paintings made by the author and by Japanese artists.

Mr. Octavius Hansard proposed a vote of thanks to Mr. Conder for his interesting paper. Mention had been made as to the general angle of the roofs of Japanese buildings being from 30 to 40 degrees, with large and extending eaves projecting from the main to the extreme extension. He believed the climate of Japan was often somewhat similar to that of England, and as the roofs were to a great extent covered with shingles or materials of a similar nature, how was it that a mass of snow was kept from weighing down the construction of such slight roofs? He would also like to know how in so changeable a climate the amados or outside shutters were prevented from being blown to pieces? He also desired to known whether the Japanese had been able to use glass, without loss of picturesqueness, in connexion with their buildings?

The Chairman said that the meeting would willingly accord a sincere vote of thanks to Mr. Conder for his interesting paper. He had given many curious details relating to Japanese architecture and gardening. Mr. Conder had mentioned the Chinese style as being exhibited in some of the older buildings, and he (the speaker), therefore, imagined that Japanese architecture had been derived from China. Nothing had been said in the paper about the tenure of land in Japan, in regard to which he felt some interest. On one occasion he thought he would have something to do with a Japanese building, but it came to nothing. At the time, however, he was much puzzled as to how the building was to be designed on a site he had never seen, and as he knew nothing about the dimensions and levels. He was told, however, that there need be no difficulty, because in Japan the projector of a building could purchase any bit of land he wished. The owner of the land was bound to register his own valuation of the land, and at that value he was bound to sell it if a purchaser came forward to buy it. There was also little fear of too high a valuation being put upon the land, as the registered value formed the basis for levying income-tax.

The vote of thanks was then put, and was cordially received.

Mr. Conder suitably replied, and, in answer to Mr. Hansard's queries, said that a slope of from 30 deg. to 40 deg. was rather a vague definition. No Japanese roof was of one continuous slope, the slope being steeper towards the top of the ridge, with a flatter slope at the bottom, the two slopes combining with a slight parabolic curve. These roofs, especially when covered with snow, were of extreme weight, but in Japan the idea of carrying the whole weight of the roof on to the external walls by means of ties, posts, and so forth, was not followed. The roof was supported from as many points in the interior of the building as possible, so that the weight was spread over a wide area. With regard to the running shutters, a Japanese house in a storm was rather a noisy place; the shutters rattled, and it was necessary to see that they were tightly fastened to prevent the risk of one or two being blown out. At the same time, as the whole building could not boast of any great solidity, the shutters were as well-off as any other part. Since glass had been introduced it had become customary to use it. If the whole of the sides of the building were filled in with glass it would give a bleak and bare appearance to the rooms; but a sort of compromise could be effected by using a central pane of glass and leaving the remaining ones of paper. Referring to Mr. Waterhouse's remarks on the Chinese style, Mr. Conder said that, of course, Japan originally took her architecture, as well as her arts, from China. Many modifications had taken place in the style as introduced from China, while changes had also occurred in China, the result being that the present Chinese style was very different from the Japanese. It was, therefore, difficult to know how far the present Japanese style was like the old style which she first took from China. It was probable that in those days the Chinese style was also a wooden style, though now-a-days the Chinese used more solid materials. The pagodas in Japan were of wood, whilst those of China were coated with brick, and even porcelain. With regard to the question of land tenure in Japan, he could scarcely explain it without going into a long political history of the present condition of Japan. That country was not quite under what could be termed a free Government, but rather under an autocratic Government, which could do pretty much as it liked in matters of securing land, especially in the capital. Indeed, the greater part of the land belonged to the Government, and it was easy to obtain what was wanted by the use of a certain amount of diplomatic pressure and persuasion. Mr. Conder, in reply to a query, said that his brother had already gone into the question as to whether the Japanese specially constructed their buildings to escape destruction by earthquake. He (the speaker) maintained that there was nothing in the construction of the buildings in Japan to make them in any way suited to withstand earthquakes. They were extremely top-heavy, and were without tiers or braces of any sort. In the ordinary earthquake seasons in Japan the buildings swayed about in the most alarming manner, and no native builders or architects of the old style had ever laid claim to their buildings being earthquake-proof. The central post of the pagoda, too, had been merely put in to stiffen it against wind and render it more stable. The curious fact that certain of the posts did not touch the ground had already been scientifically explained.

We give plans and an elevation of one of the tea-houses referred to by Mr. Conder. The proprietors of these tea-houses, in accordance with ancient custom, make it a prominent feature of their business to take charge of would-be theatre-goers, whom they personally conduct to places of amusement, entertaining them before and after the performance at their own inn, and much to their own advantage. We also reproduce two drawings exhibited by Mr. Conder of one of the gateways, which are among the most characteristic features of the architecture of the country.

Hydraulic Lift Service in the City.—The Winchester House Company of Old Broad-street, City, have just started their third and largest hydraulic passenger lift. It is of exceptional size, having a total travel of 90 ft., and a solid steel ram measuring 5¾ in. diameter by about 95 ft. in length. The two previous lifts have a travel of 80 ft. each. All are in constant use at a speed of 250 ft. per minute, and are yet under perfect control. In these three lifts the Winchester House Company possess a service unequalled by any other building in the City. The type of lift selected for this important installation was Stevens & Major's hydraulic balance, and the work has been carried out by Messrs. Archibald Smith & Stevens, under the supervision of the architect for the building, Mr. F. Pilkington. The power is supplied by the London Hydraulic Power Company.

LECTURES AT THE ROYAL ACADEMY.

PROFESSOR MIDDLETON ON MEDIÆVAL SCULPTURE.

THE Slade Professor of Fine Art at Cambridge delivered his second lecture on this subject at the Royal Academy on the 25th ult. He commenced by pointing out that the chief existing plastic works which were produced during the Byzantine period were a number of large bronze doors for cathedrals and abbey-churches. These belonged to the close of the early period, and were, so to speak, the first suggestions of the Renaissance which was soon to come. Though made for very different places,—Germany, Pisa, Southern Italy, and Sicily,—yet, in general design, in technical execution, and even in the style of their detail, they were very similar, and were striking examples of the widespread prevalence of one type of art. They were designed in two folds, with a number of square panels, each enriched with a relief of some saint, or, more usually, some Scriptural subject. In all the design was very simple, and of much decorative value, in spite of the very rude modelling of the figures. The framing of the doors was, in some cases, ornamented with reliefs of foliated patterns, magnificently designed, full of spirit in every curve, and finished with the minute detail of a piece of jewelry. These magnificent specimens of early bronze-work were produced during the greater part of two centuries,—the eleventh and twelfth. The earliest example, that at Hildesheim Cathedral, was due to the skill of Bishop Bernwald, a real precursor of the Renaissance, who, two centuries and a half before the Pisan Niccola, examined and appreciated the beauty of Classical art, and did his best to throw off the dull Byzantine formalism and to introduce some increase of artistic beauty into the modelling of the human form. This Bishop of Hildesheim, like St. Dunstan in England and St. Eligius in France, was himself a skilful worker in gold and silver, and also, on a larger scale, in bronze. He died in 1022, and for a while there was no successor to carry on the revival which he began, although his influence was traceable in the similar bronze doors at Augsburg (dating from the second half of the eleventh century) and in those at Gnesen. Most of the bronze doors in Italy, some of which were signed, appeared to be the work of Byzantine Greeks resident in Italy. Those at Pisa and Monreale, by the Pisan sculptor and architect Bonannus, were, in style, simply copies of those of the Byzantine sculptors. The Monreale example was dated 1186. Having mentioned other bronze doors existing at Rome, Monte Cassino, Amalfi, Ravello, Trani, and elsewhere, the lecturer said that one outside Rome, made for the Basilica of St. Paolo fuori le Mura, was of the eleventh century, and was signed as the work of a Greek named Staurachios, who also cast the doors at Amalfi in 1066. The doors made for the basilica referred to were richly decorated with niello-work, and though a good deal injured by the fire which destroyed the nave of the basilica in 1824, were not lost or destroyed, as many people believed, but were now kept in a great closet in the sacristy, and were not shown to visitors. Passing on, the lecturer said that another fine class of bronze-work of about the same date as these doors were the large bronze fonts in some German churches, such as Hildesheim and Osnabruck. The reliefs on the outside of the bowl usually represented Bible scenes of baptism in very high relief. One of these fonts was, for its date, one of the most remarkable works of art in the world. He alluded to the bronze font at Liège, the work of Lambert Patras of Dinant, early in the twelfth century. There was a cast of this work in the South Kensington Museum. Its figures, representing Christ being baptised by St. John, with attendant angels, were modelled with wonderful grace and refined beauty in expression and attitude, and in the simply-designed curving lines of the drapery. Professor Middleton said he knew of no other work of art so strikingly in advance of its time. Except for some slight stiffness of pose, the reliefs were worthy of the best sculptors of Florence three or four centuries later. In England, little sculpture of merit seemed to have been produced till the great renaissance of art under Henry III. During the Saxon and Norman periods, the chief productions of the sculptor's art were apparently the reliefs and statuettes in gold and silver which were used in so lavish a way for retables of altars and for shrines to

contain the bodies of saints. These works, though magnificently decorative in effect, owed but little to any merit in the figure modelling. Large works in bronze were not produced in England, and the lead fonts of the eleventh and twelfth centuries were but feeble in their design and treatment as compared with the noble bronze fonts of Germany. Some very curious large stone reliefs* now in Chichester Cathedral exhibited a very degraded state of the sculptor's art in the eleventh century. They represented two scenes from the Raising of Lazarus; the figures were stiff, the pose very clumsy, and the drapery of an exaggerated Byzantine character, with long stiff folds. The hair was treated like a bundle of ropes, and the hard ugliness of the faces was accentuated by the insertion of bits of glass or enamel in the eyes. In the twelfth century the Norman churches of England were often very richly decorated with sculpture, which though in itself rudely modelled and badly proportioned, was yet always very skilfully designed to suit its special position, and was usually of very great decorative value. But in the main, the stone sculptor in England till the thirteenth century was not an artist of a high class, but simply a mason with a strong feeling for decorative design. At that time the goldsmith was the artist-sculptor, and hence we found that in the time of Henry III. the old goldsmiths' family of the Fitz-Othos came to the front when sculpture of a high class was needed. England had always been remarkable for skill in the working of gold and silver, and the training which so many of the Mediæval sculptors went through in the manipulation of the precious metals had an important effect on their larger works in the shape of bronze statues or reliefs. It taught them to aim at minute delicacy of detail and perfection of surface, qualities which did much to increase the beauty of bronze work. The lecturer, after referring to the traces of this influence as seen in the works of Donatello, in the two bronze effigies by William Torell, in Westminster Abbey, and in the works of Ghiberti, passed on to speak of the sculpture of the thirteenth century in England,—one of the most remarkable periods in the history of the development of art that the world had ever seen. At the beginning of the thirteenth century, in the reign of John, all the arts seemed paralysed by the troubled state of the country; and yet, by the end of the century, England had reached the climax of her artistic splendour, and was, on the whole, the foremost art-producing country in Europe. In all the chief branches of the arts, in painting, sculpture, illuminated MSS., embroidery, and work in the precious metals, England was alike surpassed by no other nation. In one only of the lesser arts, that of pattern-weaving, was England surpassed, the best work of that kind then produced being done by the Moslem silk-weavers of Palermo, and by the carpet-weavers of the East. As an example of the remarkable power and skill of the English sculptor of the second half of the thirteenth century, the lecturer referred to the wonderful series of statues and reliefs which covered the west front of Wells Cathedral,—works which, he said, for their special purpose had never been surpassed in more recent times. There were more than six hundred figures in the round or in relief, arranged in tiers one above another, and covering the whole front with one mass of sculpturesque splendour. The typanum of each doorway was filled with a relief, and above were rows of colossal statues of kings and queens, knights and prelates, prophets and saints, forming a wonderfully comprehensive scheme of theology and history. Many of the heads of these figures were full of soft beauty and delicate grace, with the hair flowing in wavy tresses or drapery thrown like a hood over the head. All the figures were remarkable for extreme dignity of *pose*, and the simply-designed lines of the draperies were all most thoughtfully arranged to suit the main lines of the building which formed the background and frame to the figures,—a fact from which the lecturer concluded that the sculptor was also the architect. Indeed, the perfect decorative value for which so much of the English and French sculpture of the thirteenth century was remarkable, was due to the fact that the architect and the sculptor were one man. The work of this period was characterised by reserve and restraint on the part of the sculptors. In conclusion, the lecturer mentioned the number of different materials used by the Mediæval sculptors, and described the processes and limitations attaching to each. The sculptors of old with a true sense of what was of value in art, despised no material, but they felt that beauty and dignity of form ennobled any material.

* Illustrated in the *Builder* for Dec. 11, 1886.

MR. G. AITCHISON, A.R.A., ON DOORWAYS.

On Monday evening last Mr. Aitchison delivered the first of a series of three lectures on architectural subjects. In this lecture he treated of doorways. He observed that the poet found language, human joys, sufferings, and passions ready to his hand. These he had to observe and describe in words that evoked corresponding emotion in his hearers, and he had to set the whole to a tune. He captivated his hearers if he could coin a striking phrase; he was called great if he could picture to us higher joys or deeper sufferings than those of our own days, if he could portray the grander passions of a more vigorous age, or enlist our sympathy with a nobler enthusiasm or higher aspirations. The painter and the sculptor had their models always before them in the shape of Nature's works, but they had to choose those graceful lines and that happy combination of colours that were mostly momentary and evanescent, and fix them for ever for our admiration. We called the painters and sculptors great if they could perfect the types suggested by eliminating those defects which were due to accidental or untoward circumstances. But architecture, like music, could only gather slight hints from Nature, and must elaborate on those until she could please, move, or entrance man. Unhappily, at the present moment he was "like the deaf adder that stoppeth her ear; which will not hearken to the voice of charmers, charming never so wisely." Hence there was now no architectural language, and each architect tried some paraphrase of some bygone architectural harmony which once entranced mankind, and hoped he might captivate the multitude. It was not difficult to say, "Plan conveniently and with ingenuity, and, when occasion offered, strikingly"; nor to say, "Construct soundly and daringly," and to more or less point out how these things should be accomplished. It was equally easy to say, "Design beautifully," but when one was asked what sort of beauty now pleased, one could only reply, "You have to find that out." The sublimity and perfectness of Greek architecture, the magnificence of Roman, the luxuriance of Byzantine, the savage grandeur of Romanesque, the gorgeousness of Saracenic, the mystery and wondrousness of Gothic, or the ornate subtlety of Renaissance, produced neither delight nor admiration. The lecturer was consequently driven to seek some of the necessities of structures, and to make those forms that once pleased pass before his audience like the procession of kings before Macbeth. He had chosen "Doors," "Windows," and "Balustrades," and he would begin with doors. The first point to be noted was that when mankind began to build with stone, the theoretical doorway would be a triangle formed by corbelling over each course of stone on each side until the two touched at the top. He took Early Greek work for his illustration, and showed that the doorways at Missalonghi were of that triangular form, only the projecting corners of each corbelled stone were worked off to the line of the triangle. Openings of the form of a pointed arch were next made, to get more headway, and eventually the bottom part only of the opening was thus built, and a stone lintel thrown across the top. The inward sloping of the jambs narrowed the opening for the lintel, which was an advantage, for in early times there was difficulty in getting long stones, and much labour had to be expended in getting them to the spot and in forming earth slopes on which to haul them up to the height at which they were to be placed. The inward inclination of the sides of doorways was eventually made in straight lines, and this was continued even when stone uprights were used as jambs. The Lion Gateway at Mycenæ was instanced as one of the earliest examples of this. The lintel was allowed to project on both sides beyond the jamb, to increase its strength, and these sloping sides and the projecting lintel were continued in civilised times, on account of the whole doorway forming an æsthetical balance. When the jambs and lintel were moulded on the outer edge, the projecting ends of the lintels formed the "knees" to the architrave. Vitruvius handed down the tradition of forming "knees" on the architraves of doorways, so that the form was common in Roman times for several centuries, and after its abandonment in Byzantine, Romanesque, and Gothic times, it was again introduced by the Italian Renaissance architects, and still continued to be a favourite form in Europe. That not only showed the conservatism of mankind, but also the rarity of successful invention, as there was every reason to believe that it was adopted in, or shortly after, the Bronze Age (all these developments were illustrated by diagrams and drawings). The lecturer pointed out that Diocletian's palace at Spalato, built about the end of the third century, was one of the most interesting buildings in existence, as it showed the epoch at which the Romans began to think for themselves, when they threw aside the post and lintel construction of the Greeks, with which Roman buildings had hitherto been adorned, and used their own arches springing direct from the capitals of the columns, thus laying the foundation for Byzantine, Romanesque, and Gothic architecture. The "Porta Aurea" of that palace was the prototype of the majority of Byzantine doorways throughout the East. Mr. Aitchison next pointed out that the arch on two columns came to be looked upon as an ordinance, and was then used in Romanesque doorways in successive layers, so to speak, each one including the one before it. The beautiful doorways of St. Trophime at Arles and at St. Gilles were the most perfect forms of that kind of doorway, which was the prototype of Gothic doorways. The excellence of the two examples named was due to the influence of the Byzantine work in Central Syria. The fine sculpture of those two doorways was due to the imitation of the imported figure work from Constantinople, and to the study of the Gallo-Roman sculpture. The Mosque of Touloun in Egypt, built by a Christian architect in 885 A.D., had its four columns to the *Kibleh* placed as "nook shafts," and the *Kibleh* had a pointed arch. Hence he might be excused for mentioning it in connexion with doorways. Fergusson, in his "History of Architecture," said that from that mosque "we must date the complete foundation of a new style." And truly there we saw the beginning of honeycomb work, which was found in the pendentives of the dome in front of the *Kibleh*. The architect of the mosque was imprisoned by Ahmed Ibn Touloun, the Governor of Egypt, for advising him to use old columns for the mosque. The Governor said that marble perished by fire, and he wanted an original mosque of brick, that would withstand fire and the inundations of the Nile. The architect from his prison managed to let the Governor know that he could build him what he wanted, and when summoned before him took a skin of parchment and drew out the plan without a column, but said he must be allowed four columns for the *Kibleh*. The plan, with the original treatment of the piers, so pleased the Governor that he told the architect to build the mosque. He gave him 100,000 pieces of gold for the workmen's wages, and promised to furnish him with all the materials he wanted. Two years afterwards the mosque was opened for service, and the Governor was so pleased with its convenience, appearance, and originality, that he presented the architect with 10,000 pieces of gold, and gave him a pension for life as well. A royal gift like that must have been a great stimulus to architects, but the Arabs were as famous for generosity as the English were for meanness to the architects. One of the capitals to these four columns bore a strong resemblance to one at San Vitale at Ravenna, executed in the time of Justinian, after 525 A.D. By way of advice to his hearers, Mr. Aitchison said:—When a doorway is on the front of your building, and not behind a portico, try and concentrate on it a due amount of importance without making it so obtrusive that it will not compose and harmonise with the front. Do not make it a mere hole in the wall, into which the owner may sneak. Also, carefully consider what elements of beauty are most in accordance with your own taste; then study the style that contains the greatest number of those elements, and endeavour to so vary and add to them that your variations may be an improvement, and mark the style as your own. No architect, I think, should desire to be like "three labourers of Babel" by using different styles, for if he be

really an architect he must have some convictions, and what sort of work can a man do when he is working against his conviction? I may, perhaps, be allowed to paraphrase one of the political cries, and say, "One man, one style."—Besides other advice and admonitions to the student, the purport of the lecture was to show that the widest variations in architecture were got by gradual addition to or suppression from an original type, just as the widely-differing wings of the albatross and the apteryx had been derived from one common type.

Mr. Aitchison's second lecture was on "Windows," and was delivered on Thursday evening. His third and concluding lecture, on "Balustrades," will be delivered on Monday evening next. On Wednesday next Mr. Reginald S. Poole will lecture on "Medals."

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE seventh ordinary meeting of this Institute for the present session was held on Monday evening last, Mr. Alfred Waterhouse, R.A. (Vice-President), in the chair.

The Liverpool Cathedral Memorial.

Mr. John Oldrid Scott asked leave to make a personal explanation arising out of the matter of the memorial in reference to the Liverpool competition. This was a question in which he, as well as all church architects, and, indeed, all members of the profession, had been deeply interested, and when the matter was decided he and others felt very strongly about it. He met one of the competitors, Mr. Bodley, and also Mr. Brooks, and sympathised with both, as he felt that their designs, in his humble opinion, were a long way ahead. That was a mere private matter, but out of it had grown all this disturbance, which he very much regretted. The matter went through various phases, and ultimately came to the memorial, which was sent out in a particular form. After it had received a considerable number of signatures, he had a call from Mr. Aston Webb on behalf of the Competitions Committee of the Institute. Mr. Webb then informed him that the Committee objected to the memorial because, on the face of it, it appeared to discredit Mr. Christian's report, and also to invite expressions of public opinion. At that time Mr. Webb laid before him a corrected copy of the memorial, with two alterations, one being a mere matter of form, and another an essential correction. Mr. Webb had drawn his pencil through the words, "for the purpose of eliciting the best skilled and widest public opinion upon them." This was an essential alteration, because it struck out what seemed to be considered objectionable by the Competitions Committee. The other alteration was a mere suggestion as to the transposition of certain words, and he therefore looked upon it not merely as an expression of opinion, but as an actual suggestion for an altered form of memorial. The Committee also suggested this alteration in the construction, viz., that the following words should be placed at the end,—"On which so much depends respecting the future of the English church, and the art of architecture throughout the kingdom." He therefore looked upon it as an actual suggestion from the Committee to alter the memorial. Mr. Seddon, with whom he was acting, was out of town, and being unable to communicate with him, he took it upon himself to accept what he thought was the suggestion of the Competitions Committee. He desired to communicate with the competitors as early as possible, and so he wrote to the building journals as follows:—"At the suggestion of the Committee on Competitions of the Royal Institute of British Architects, the proposed memorial, which has received about 300 signatures, will be modified in the following terms," and then it went on in the terms he understood the Committee to suggest. He now felt that it might have been more civil in him to have waited another week, but his not doing so was purely an error of judgment. He trusted he had made it clear that he was acting, as he thought, fairly in the matter. It was not as if he had half accepted the proposals of the Competitions Committee; he had accepted them *in toto*, and, therefore, he had no idea that the matter should have been referred back to them. He saw now that it would have been more courteous had he submitted it again to Mr. Webb to be laid before the Competitions Committee, and regretted he had not taken that course. He hoped he had said sufficient to explain his action in the matter, to the satisfaction of the Institute.

Mr. Aston Webb remarked that the Competitions Committee would doubtless accept Mr. Scott's explanation. Mr. Scott had referred to alterations being made in pencil, but he had made a mistake in regard to that, as he (the speaker) distinctly recollected that they were made in ink. Mr. Scott had also omitted to mention two important points. The Committee objected first to the sentence which asked for an exhibition in order to elicit further opinion, and also to its being asked for before a decision had been arrived at by the Committee. These were the two points in the memorial the Committee considered as most objectionable. It was true, no doubt, as Mr. Scott said, that he had cut out everything to which the Committee strongly objected; but, on the other hand, they objected to have the memorial fathered on the Competitions Committee. Had it been referred to the Committee they would probably have taken no further steps in the matter; but, at the same time, they would have raised the objection to its being fathered upon them.

The Chairman added that it would be undesirable to prolong the discussion. Mr. Scott had made a fair explanation, and the members had also had the benefit of Mr. Webb's restatement of the case, which appeared to have fully met with their approval.

Obituary.

Mr. William H. White (Secretary) announced the decease, on the 19th of February, of a distinguished French scholar in the domain of archæology, M. Olivier Rayet, an Hon. Corr. Member of the Royal Institute of British Architects. M. Rayet, who died at the early age of thirty-nine, after a serious illness resulting from overwork, was a member of the School of France at Athens, a Professor at the Collège de France, and Directeur-adjoint of the École des Hautes-Études. But he would be best remembered as author of the "Monuments de l'Art Antique," which would have caused the portals of the Institut de France to open to him before the age at which such an honour is usually accorded. His other great work, "Milet et le Golfe Latmique," was the result of researches made in Asia Minor, in conjunction with Mr. Albert Thomas, Hon. Corr. Member, at the cost of some of the Rothschild family,—a work not yet completed, only the earlier parts having been received for the Institute Library from the talented authors.

Japanese Architecture.

Mr. Josiah Conder then read a paper on "Domestic, Civil, and Palatial Buildings in Japan," of which we give an abstract, with illustrations, on preceding pages."

The Chairman then announced that the next meeting, on the 14th inst., would be a special general one for the election of the Royal Gold Medallist; after which a paper would be read by Professor Kerr on a professional subject.

COMPETITIONS.

Memorial Fountain, Reading.—About twenty-five designs were received from various architects in an open competition for a memorial fountain to celebrate the Jubilee Year. The committee were unanimous in selecting the designs by Mr. G. W. Webb, A.R.I.B.A., of Friar-street, Reading, under the motto of "Faith, Hope, and Charity." The fountain is to be built of stone, and to cost 400*l.*

Kendal Grammar School.—We are informed that seven local architects competed for the above buildings, and that the design submitted by Mr. Stephen Shaw, of Kendal, has been accepted, and will be carried out at once under his superintendence. They will be of limestone, with freestone dressings and Westmoreland slated roof.

Guildford Castle and Bowling Green Estates.—For the laying out of the Guildford Castle and Bowling Green Estates, twenty-four sets of drawings have been sent in, and the Council have awarded the premiums as follow:—First (30*l.*), to Messrs. Littlewood & Aston, Great James-street, Bedford-row; second (20*l.*), to Messrs. Cheal & Son, Crawley; and, third (10*l.*), to Mr. Fletcher, Princes-street, Cavendish-square.

CENTRAL ASSOCIATION OF MASTER BUILDERS OF LONDON.

THE fifteenth annual general meeting of the Central Association of Master Builders of London was held at the offices, 31, Bedford-street, Strand, on Wednesday, the 23rd ult. In the absence of the President, Mr. Frederick J. Dove, was voted to the chair.

Copies of the balance-sheet having been handed to the members present, the Secretary read the balance-sheet prepared to the 31st of January, 1887, and signed by the auditors. It was resolved,—"That the balance-sheet as audited and signed be approved and adopted."

The Secretary next read the following report:—

"The committee have the pleasure to present their fifteenth annual report to the members, and in so doing are glad to be able to state that they believe its usefulness is generally appreciated by the trade; they are also hopeful that the present year will show the long-looked for improvement in the building trade.

The committee regret to state that the guarantee fund has not yet been fully subscribed, but trust that during the present year the Secretary may be enabled to obtain subscriptions for the small amount which is deficient, and members will be pleased to learn that although the member on whose behalf the fund was raised was not successful in his appeal, still the action of your committee was instrumental in benefiting him to the extent of nearly 70*l.* Members will be glad to learn of the success of a contractor who carried a somewhat similar case (Wood *v.* The Tendrill* Board of Guardians) to the High Court.

This Association, in connexion with the Institute of Builders and the National Association of Master Builders, appointed a sub-committee to watch the proposed amendments to the Employers' Liability Act in Parliament last year, and Mr. Bird and Mr. Cowlin gave evidence before the Select Committee of the House of Commons appointed to inquire into the working of the Act. The Select Committee have since issued their report which, among other points, recommends the withdrawal of the clause rendering it compulsory for notice of injury to be given to an employer within six weeks, and that a contractor shall be held responsible for accidents caused to sub-contractors' workmen. As members are aware, the Act expires with the present year, and two new Bills to amend it have been again introduced into Parliament, but these will probably be withdrawn, notice having been given by the Government of their intention to introduce a measure dealing with the matter at the earliest opportunity, and in view of the above-mentioned report there is reason to expect that every effort will be made by the trades' unionists to increase the already great responsibility of employers.

A Bill has been introduced into Parliament by Sir James McGarel Hogg with reference to the removal of sub-soil under streets, and the laying of mains or pipes in new streets.

A Bill to amend the law relating to the rating of machinery has also been introduced.

The Sanitary Assurance Association have arranged for the introduction of a 'Sanitary Registration of Buildings Bill' during the present Session, to make it compulsory on the part of the owner, lessee, sub-lessee, or occupier in towns or districts of 2,000 inhabitants, to deposit with a registration authority a certificate that the sanitary condition of all schools, colleges, hospitals, asylums, hotels, and lodging-houses is satisfactory.

The foregoing matters will be carefully watched by the committee, and such action as may be deemed advisable in the interest of the trade generally will be taken, in conjunction with the several kindred associations.

The action taken by the Plumbers' Company in granting certificates to plumbers was referred to in the report of the committee last year, and your committee think it desirable that the position of the trade in reference to this matter, and also to the question of plumbers working different hours to other branches of building mechanics, should have the earnest consideration of the Association.

A movement was made in the Newcastle district last year to establish an eight-hours league, with the object of obtaining the co-operation of the trades' unions throughout the country, and there is little doubt great exertions will be made to give effect to it.

In view of the proposed Amendments of the Employers, Liability Act, the committee wish to direct the attention of members to the Builders' Accident Insurance, Limited. The Company has been in existence for over five years, and may, therefore, be considered to be firmly established, as, in addition to having a premium income of over 5,500*l.* per annum, the funds in hand on the 31st of May, 1886, amounted to 7,259*l.*, and the committee believe it to be the only company covering the same number of risks for the premium charged of 4*s.* The Company also cover risks to the outside public at the extraordinarily low rate of 1*s.* for every 100*l.* paid in wages."

After some remarks by the Chairman upon the several matters therein, and by Mr. Maton in respect to the clause referring to the Guarantee Fund,

The Chairman moved, it was seconded by Mr. J. W. Hobbs, and resolved, "That the Report as read be adopted."

It was moved by Mr. Adamson, seconded by Mr. Greenwood, and resolved,

"That the thanks of this meeting be accorded to Mr. George Burt for his able services as President during the period he had been in office, together with an expression of regret that indisposition should have prevented his being present."

The Secretary reported the changes in the officers and committee, and stated that the balloting-list had been prepared in accordance with Rules XV. and XVI.

The Chairman, officers, and committee then retired from office, and it was moved by Mr.

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* *Sic* in report. It should be Tendring (see *Builder*, p. 100, *ante*).

b.

H. Staines, seconded by Mr. Moslin, and resolved,

"That the officers, committee, and auditors, as printed on the list forwarded to all members with the notice convening the meeting, be and are hereby elected."

The newly-elected members then took office, and, in the unavoidable absence of Mr. Bird, Mr. F. J. Dove was again voted to the chair.

Some discussion took place in reference to the subjects mentioned in the report, in which Messrs. May, Rider, Macey, Hobbs, Adamson, Greenwood, Wall, and Colls took part, and it was resolved,—

"That with reference to the several Bills before Parliament affecting the building trade, that it should be left to the committee to take such steps as they might consider best in the interest of the trade to alter or oppose them in the House of Commons."

It was moved by Mr. Rider, seconded by Mr. Hobbs, and resolved,—

"That it is desirable that the working hours of plumbers should in the future be the same as those of all other branches of the building trade, and that the committee be requested to take such steps as they may think fit to produce the result."

Finally, on the motion of Mr. Wall, seconded by Mr. Hobbs, a vote of thanks was passed to Mr. Dove for his services in the chair.

WROUGHT IRON.

FROM Mr. J. Starkie Gardner's interesting paper on this subject, read by him before the Applied Art Section of the Society of Arts on the 22nd ult., as briefly mentioned in our last, we quote the following:—

It is perfectly obvious that the smith of to-day has a much easier task than his predecessors of the Middle Ages. It appears impossible to trace the exact forms of the bars which found their way to market from the Forest of Dean or the Weald of Sussex, say, in the days of Elizabeth; but considering that the bars had to be beaten out on an anvil under the relatively primitive tilt-hammer, it is improbable that any great variety of section was produced, or that the angles of the bars were mathematically true. The "bars" were, in fact, probably analogous to the "puddle-bars" of to-day, that is, very elongated ingots ready to be fashioned into finished bars, but not themselves available to be cut up and used without labour, like the bars from the rolling mills at the present day. The fact alone that the smith had to beat out most of the sections himself in the Middle Ages has caused a most pronounced difference between Mediæval and nineteenth century smiths' work, and must ever be kept in mind in contrasting together the work of such widely different ages. Few of us probably sympathise with those who affect to prefer as a matter of taste the ugliest old production to the most beautiful modern one, but it is perfectly true of old ironwork that it possesses interest and attractions that few examples of modern work can possibly equal. If you enter a cathedral where some happily surviving antiquity has been made the theme for reproduction in modern times, such as the grill work in Canterbury, Winchester, or Chichester cathedrals, you immediately become conscious, without being an antiquary or specialist, and without being able at first perhaps to define precisely why, which is the old and which the new. The explanation is simply that the olden-time smith cut a piece from his shingled bar, which he judged by the eye would beat out into a rod of a given length, and curl up into a scroll of the desired form. More or less sufficed for him, and by his method of work he produced an irregularity and play in even the most monotonous design, which is artistically charming to us, but which was perhaps even a source of chagrin to himself. The modern smith, on the other hand, when he receives a commission, buys the required number of rods, cuts them up into pieces of exactly the same length, makes a standard pattern, and if there is much repetition, a tool to gauge the scrolls and insure their uniformity. If there is any irregularity it is considered bad smithing, and if under the conditions it is the result of mere carelessness, the result may be inartistic. The aversion to straight bars seen in the oldest examples was also probably due to the fact that perhaps the most difficult task that could be set a primitive smith was to handle a long heavy bar, and to beat it out perfectly true with mathematically exact and sharp angles. Another reason for the generally artistic superiority of the old work may have been that it was only entrusted to those who had a special aptitude, and if such a workman was not forthcoming, the work was either not executed, or was made in the simplest form; whilst, if he were forthcoming, the details at least of the design were left to his own fancy, and were, therefore, well within his own powers. In other words, it was the existence of the skilled smith that created the demand, rather than the demand that created the smith, and it seems a reasonable inference that none such had to beg for work in the Middle Ages. When a grill was wanted for Westminster Abbey, it was not the local man who had the commission; but a smith from Leighton, or a smith from Lewes, was fetched and maintained until the task was completed. Finally, it is only reasonable to suppose that the smiths of those days were not fettered by estimate or bound by time, and that the art-work was produced for art's sake, by a genuine artist, whose brains were not picked, as in these competitive days, by a crowd of imitators who copy every original design that is accessible, until the originator is weary of his happiest ideas before he has been able to derive any adequate benefit from them. . . . .

The first thing the modern smith requires is a design, and very often a working drawing showing the exact sizes of iron to be used, and the method of fixing them together. Some day, perhaps, our training schools may turn out a class of artisans such as exists in France and Italy, capable of designing as well as accomplishing the manual labour. One cannot but believe, so practical are the old designs, that in most cases they were created by the smith who executed the work, after merely a consultation with the architect. The few smiths who can do this now work at an advantage, as, unless the artist who makes their working drawings has a thoroughly practical knowledge of the craft, he will introduce needless difficulties and intricacies, which renders the work unnecessarily expensive. . . .

Hinge-work is, perhaps, the one branch of smithing in which the smith of to-day stands in absolutely the same position as the smith of eight centuries ago. Rolling mills have done nothing to lessen his task, and no sections of iron can be bought ready made that are of much avail.

Illustrations.

NEW PREMISES, CHELSEA.

THIS is an illustration of four new shops and dwelling-houses being built for Mr. J. J. Stroulger, at the corner of Sloane-square and the eastern entrance to the Cadogan Estate. The materials used are red brick, with light-red terra-cotta dressings. The building is designed so that the objectionable, but necessary, party-walls may be hidden when breaking through the roof. The gables and return ridges are built in solid brickwork, the ridges and upper courses of tiles being laid in cement.

The contractors are Messrs. Stimpson & Co., Brompton-road, and the terra-cotta is supplied by Mr. G. Jennings, of Parkstone, Dorset. The building has been erected under the superintendence of Mr. Frederick G. Knight, architect.

DESIGN FOR STAINED GLASS.

THESE two designs, were made by Mr. E. Burne Jones, A.R.A., for a window at Paisley executed by Messrs. William Morris & Co. Our illustrations are from photographs by Mr. Frederick Hollyer.

YORK PROBATE REGISTRY.

THIS building has been erected in Duncombplace, facing the Cathedral, to afford better accommodation for the deposit of wills. These were formerly stored in a building erected in the angle formed by the south aisle and south transept of the Cathedral, while the Registrar's offices were on the opposite side of the street. The two have now been combined in the new building, which also includes a residence for the Principal Clerk.

The dressings are of Stainton stone from near Barnard Castle, and the walling is from the Heaton Quarries, near Bradford. On the ground-floor are the general offices and the strong-room, which is 66 ft. long and 24 ft. 6 in. broad and 15 ft. 6 in. high, surrounded by iron shelving, the upper tiers being accessible by a gallery. On the first floor is the Registrar's private office and waiting-room.

The site was provided by the Corporation, and the building was erected by Messrs. Bull & Co., from the designs of Mr. Henry Tanner, Architect to Her Majesty's Office of Works.

THE "ORME" BEDE HOUSES, LOUTH.

THESE almshouses and grounds, situate in the centre of the town, and forming a picturesque feature, were formally opened in August last for the accommodation of ten men. They are the generous gift of the Rev. Frederick Orme, late rector of Lyndon, in the county of Rutland, who was a pupil at King Edward VI.'s Grammar School in Louth, some sixty years ago, and his father, the Rev. Thomas Orme, was head-master of the same school in 1796. The houses were handsomely endowed by the donor, who appointed seven trustees to carry out the trusts contained in the deed by which they were appointed. The donor has erected and endowed these almshouses in grateful recognition of his own and his family's connexion with King Edward VI.'s Grammar School. The Rev. Frederick Orme died on the 18th of December last.

The buildings are of brick, with stone window copings, and other ornamental features. Each cottage contains two rooms, with a scullery and other offices. This arrangement is shown on the small plan. At the end of the grounds there is a lodge for an attendant. The whole site is enclosed by a handsome iron railing on a solid low wall. Mr. Fowler, of Louth, was the architect, and the buildings were erected under his immediate supervision.

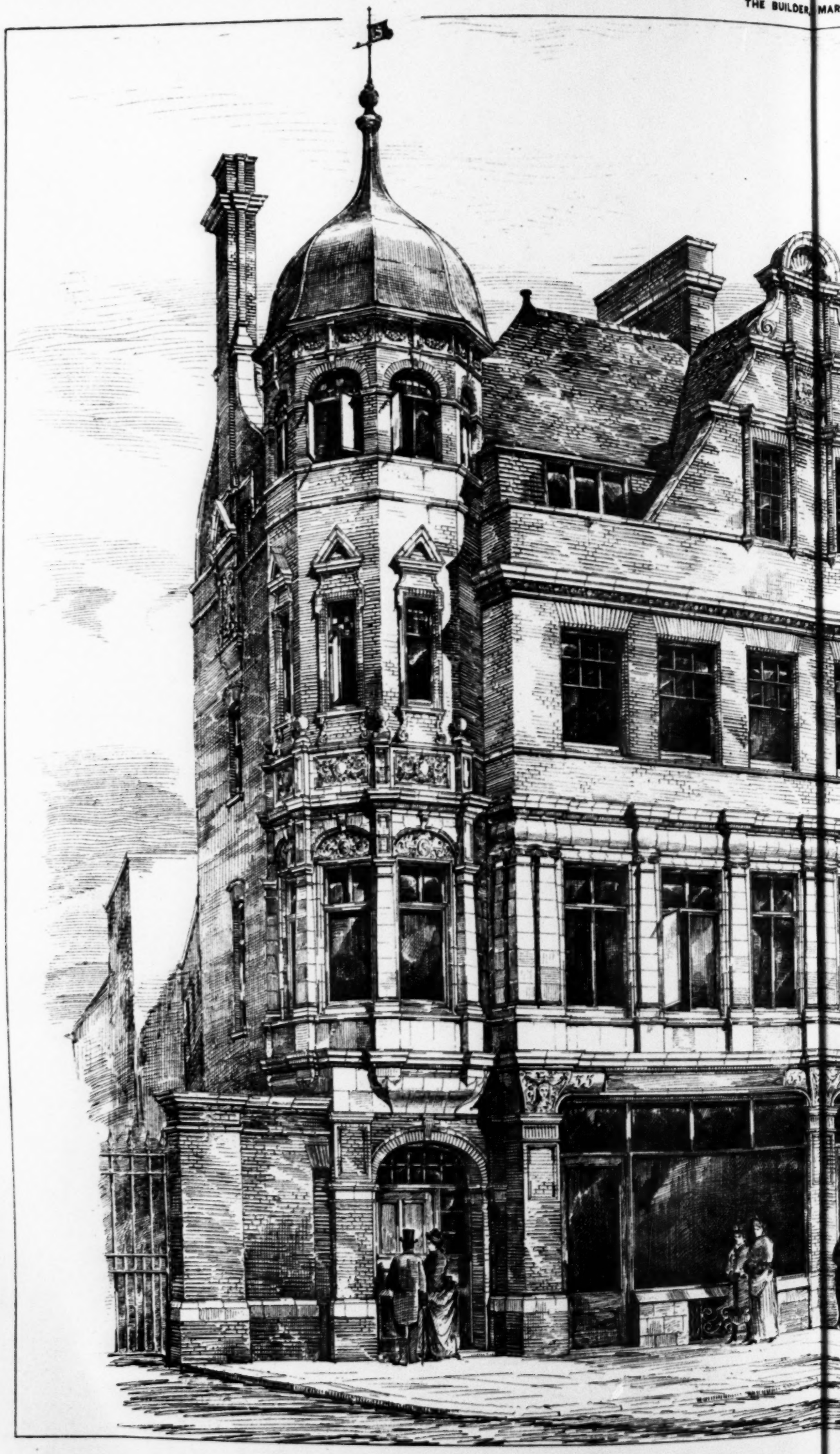
BUSINESS PREMISES, ST. PAUL'S CHURCHYARD.

THESE six warehouses occupy two-thirds of the former site of St. Paul's School, in St. Paul's Churchyard, which site it was at one time proposed to throw into the public way, a scheme which had to be abandoned on the ground of cost. The six buildings illustrated comprise the north wing and central feature of the façade, of which Mr. Delissa Joseph is the architect,—the south wing, by another architect, having been given in the *Builder* for Oct. 9, 1886. The architects had originally prepared independent designs for their respective portions, but it was eventually decided so to modify their designs that the whole frontage could be treated as a harmonious composition. The frontage to St. Paul's Churchyard of the buildings, forming the subject of the perspective, is carried out in Portland stone, with granite pilasters and bases on the ground floor, the Old Change frontage being in glazed bricks and Portland stone,—the stone having been worked by Mr. Barnes, at Portland, from details sent down by the architect, and the granite being supplied by Messrs. Fenning & Co. There is a large amount of constructional ironwork in the buildings, which was supplied by Messrs. Williams & Co. The goods lifts are by Messrs. Waygood. The builder was Mr. Thomas Pryor, of Kingsland, the architect being, as before stated, Mr. Delissa Joseph, of Basinghall-street.

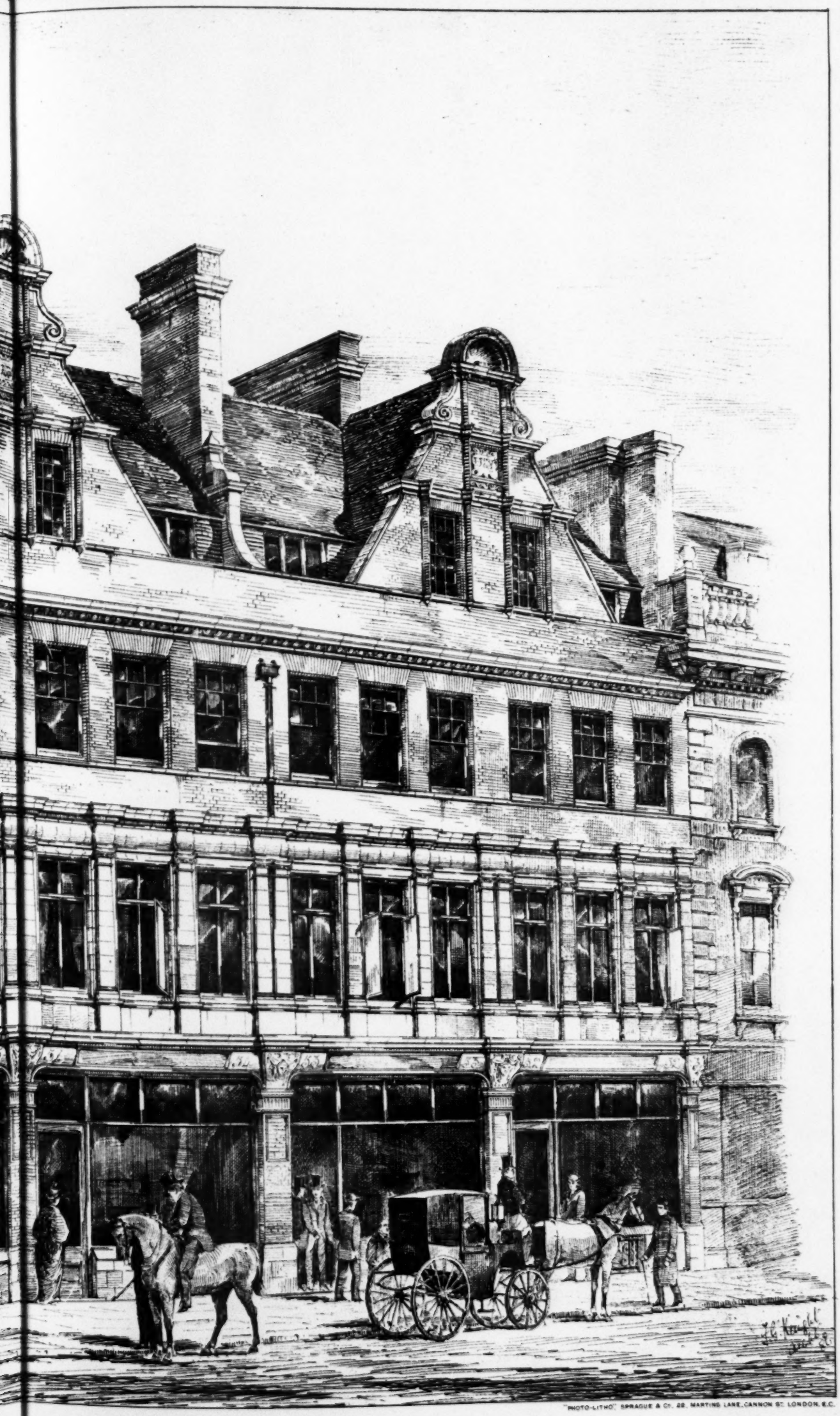
ROOD SCREEN, WARFIELD CHURCH.

THIS interesting example of Late Gothic woodwork stands in the village church at Warfield, about five miles east-north-east from Wokingham, in Berkshire. It will be noticed that the old rood-loft remains. The screen and other parts of the church were restored by the late Mr. G. E. Street, R.A.

Birmingham Architectural Association. The eighth ordinary meeting of the current session was held at Queen's College, on Tuesday evening last. The Vice-President (Mr. John Cotton) was in the chair. Mr. E. E. Westwood was elected a member of the Association. A paper was read by Mr. J. W. Tonks, on "Heraldry in modern Art." The lecturer gave a very succinct account of the rise and development of heraldry, and illustrated his remarks by some fine impressions of seals, &c. A vote of thanks, proposed by Mr. J. Cotton, and supported by Messrs. A. V. Ingall, W. H. Bidlake, and Victor Scruton (hon. sec.), was unanimously accorded to the lecturer. After a response from Mr. Tonks the meeting terminated.



PREMISES, CADOGAN PLACE



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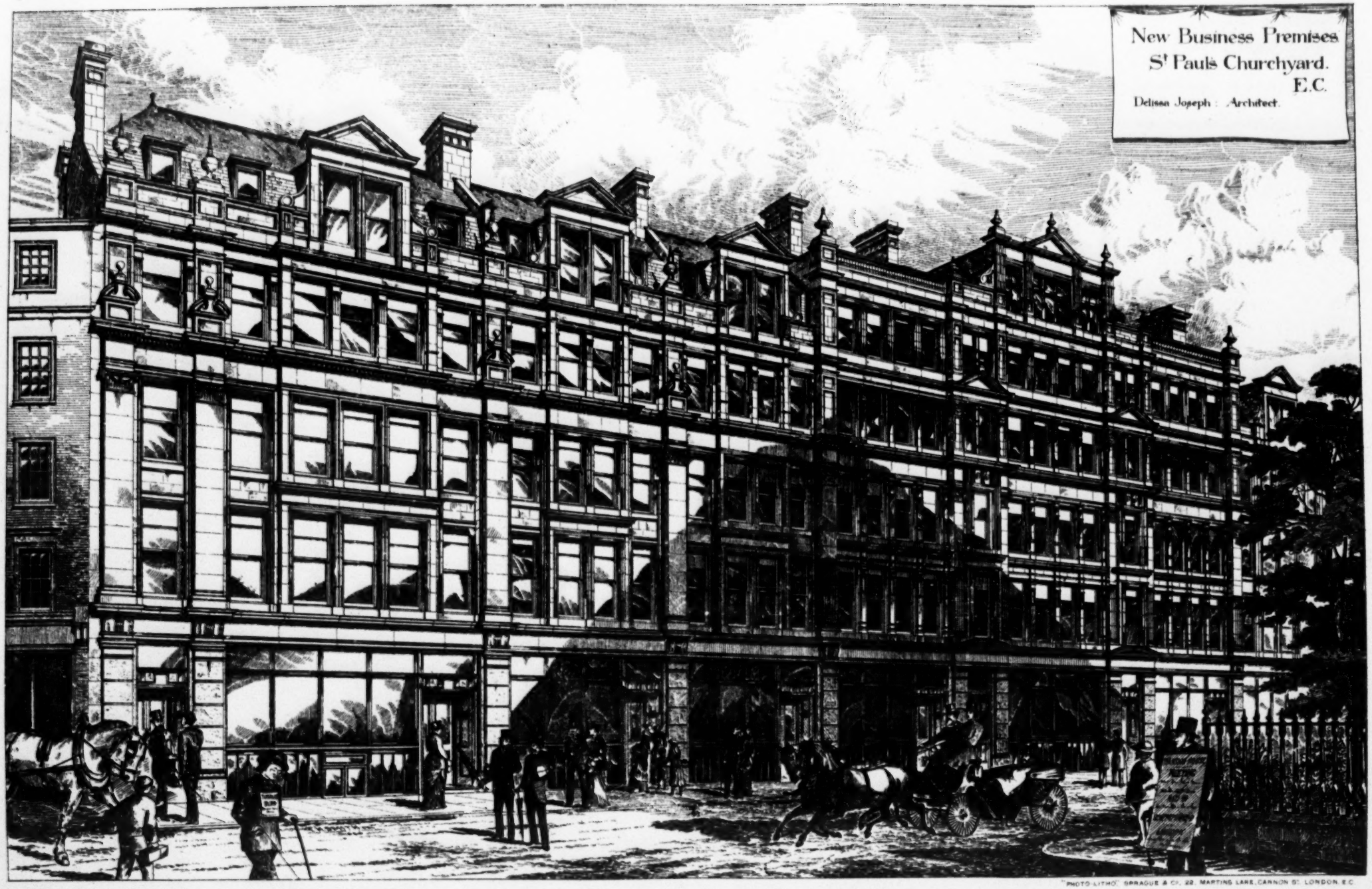
LACE.—Mr. F. G. Knight, Architect.



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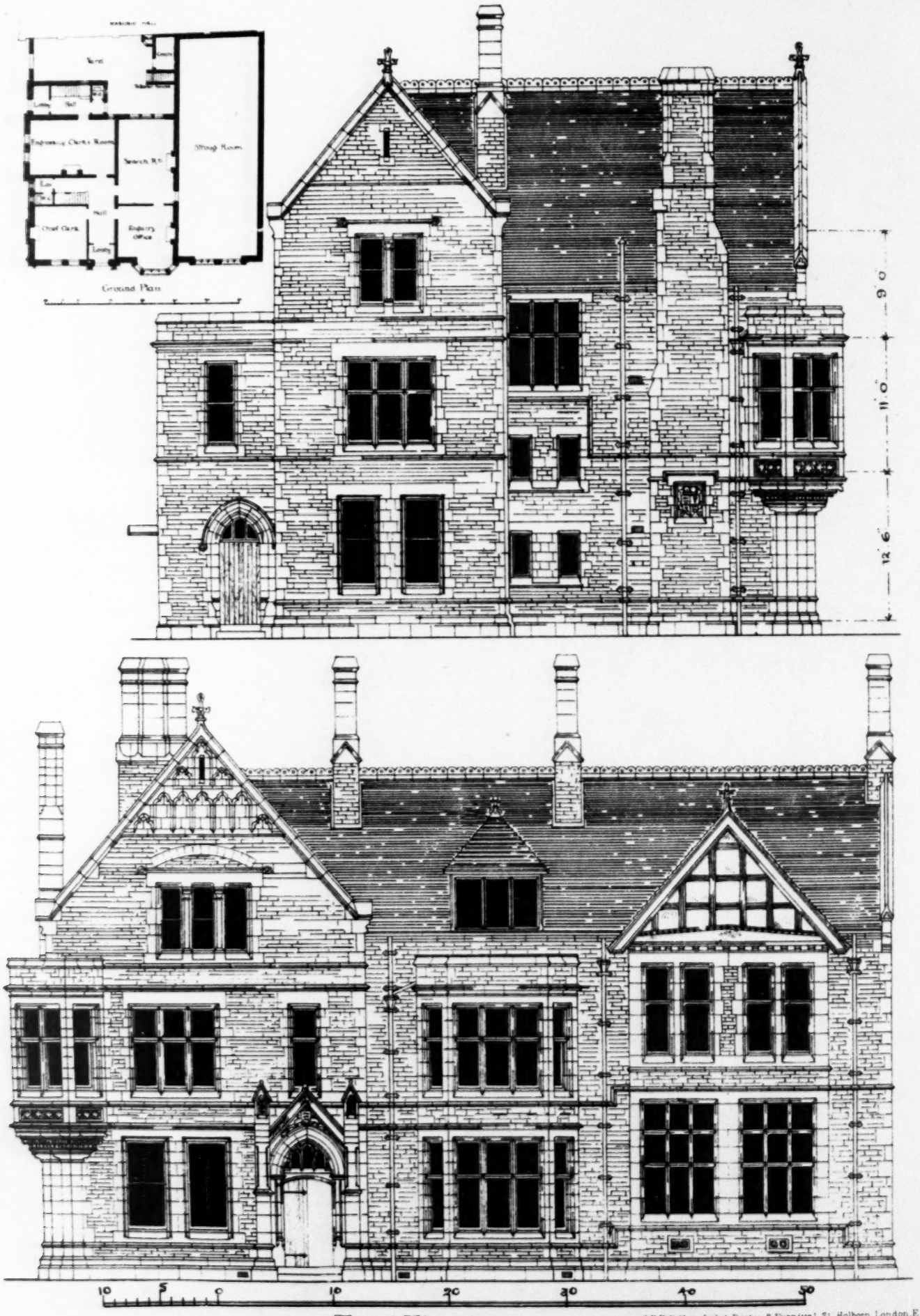


THE PROBATE OFFICE, YORK.—Mr. Henry Tanner, A.R.I.B.A., Architect.

"INK-PHOTO", SPRAGUE & Cº. LONDON.

DESIGN FOR STAINED GLASS.—BY MR. E. BURNE JONES, A.R.A.

"GIVETH TO THE POOR."

"INK PHOTO" SPRAGUE & CO. LONDON.

DESIGN FOR STAINED GLASS.—BY MR. E. BURNE JONES, A.R.A.

"WITH THE FRUIT OF HER HANDS."

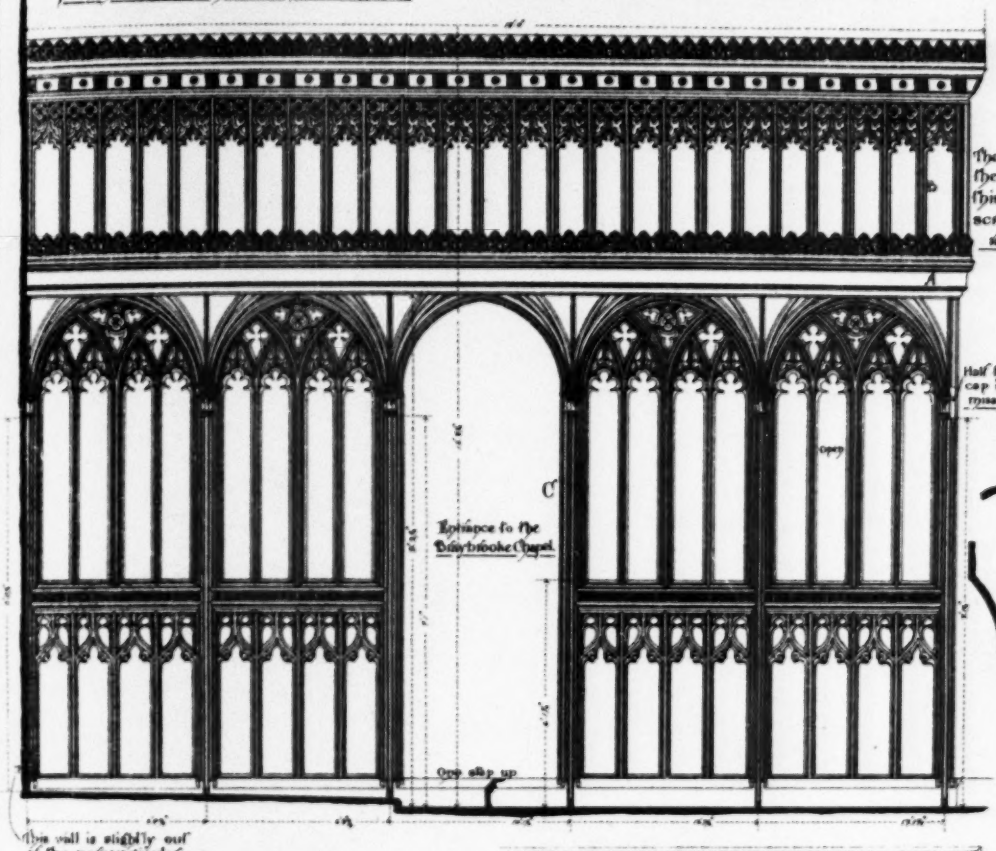
C. F. Kell Photo-Lith & Printer

5 Parcival's Holborn London E.C.

THE "ORME" BEDE HOUSES, LOUTH.—Mr. James Fowler, F.R.I.B.A., Architect.

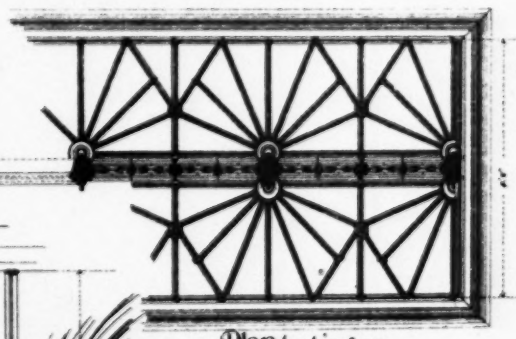
NOTES- All that part of the screen which is exposed to view is constructed of oak. When the church was restored by the late Mr. G.E. Street, R.A. many decayed or injured portions of the screen were replaced.

ROOD SCREEN, WARFIELD CHURCH.

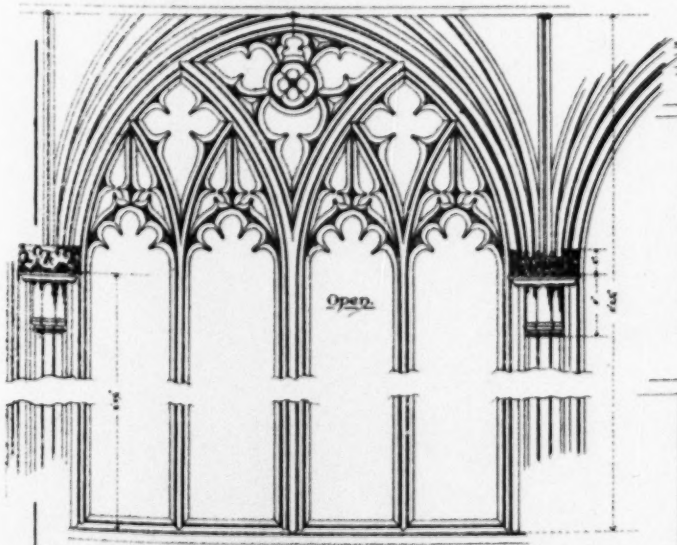


NOTE.- The screen stands at the West end of the Binfybrooke Chapel.

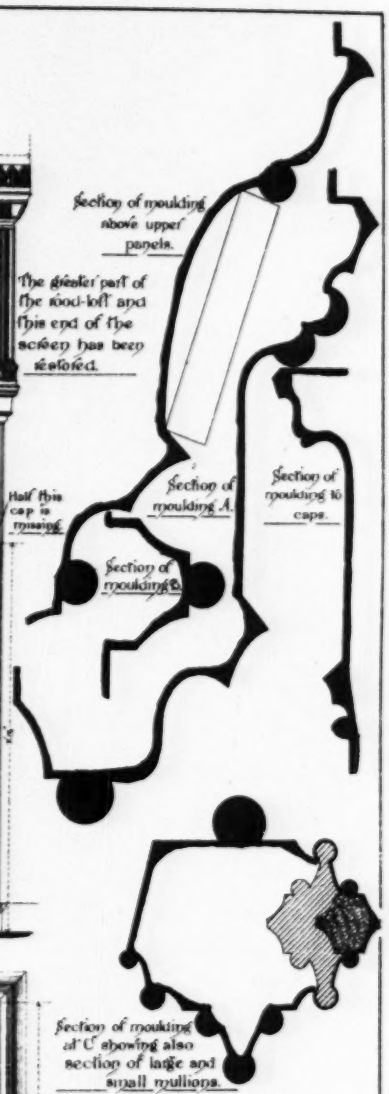
—Plan looking down—



—Plan looking up.—



E.S.K.—Detail of Bay.—


Section of moulding above upper panels.
The greater part of the rood-loft and this end of the screen has been restored.
Half this cap is missing.
Section of moulding A.
Section of moulding to caps.
Section of moulding C.
Section of moulding C showing also section of large and small mullions.

Full size sketch of cresting.

—Arthur E. Permain.—
Mens et dell Oct 15 1885.

PHOTO-LITHO SPRAGUE & Co. 22, MARTIN'S LANE, CANNON ST. LONDON, E.C.

THE ARCHITECTURAL ASSOCIATION:

DISCUSSION ON MR. WALTER CRANE'S PAPER.*

THE Chairman (Mr. J. A. Gotch, F.R.I.B.A., President), in inviting discussion, said that the lament Mr. Crane had given utterance to was one that occurred as often as the question of modern art was discussed; and, unfortunately, the voices of those who joined in the chorus of lament outnumbered those which showed any reasonable way out of the difficulty. In fact, he had never heard a solution of this difficulty advanced at all, and it was a question in his mind whether, along with other changes that were taking place in the world, they would not eventually have to alter their notions of what art ought to be, and in what beauty consisted. The whole of modern life was different to what life was in what were termed the palmy days of art. Life was much more diverse now, whereas one of the great charms of Mediæval life, and one of the incentives to the beauty then existing, appeared to have been the much greater simplicity which obtained. The calls upon a man's inventive faculties were very much less. A sort of school was spontaneously established in every branch of art, and in those schools all men and artists worked towards one common aim, and on common lines. The result was that where one man left off another man took up the matter and pushed it further on. Each man did not require to learn for himself the whole history of art, as was expected at the present day. Now, however, before the architect could really think of art he had to apply a very large amount of scientific knowledge to his work. For instance, the sanitary question discussed at the last meeting involved important additions to the work of the modern architect as compared with him of the Middle Ages, when people did not know what a drain was. Thus the time devoted by the unfortunate architect of to-day to acquiring a knowledge of sanitary science could have been devoted by his forerunner solely to the study of beauty. Then, again, the whole conditions of modern life, as Mr. Crane had said, were antagonistic to picturesqueness in a way. Take, for instance, the extension of towns. It was perfectly obvious to all who had to do with the laying out of new neighbourhoods, that matters of economy and convenience must overrule every other consideration. The properties had to be laid out in straight lines, to avoid complications, and it was only in certain neighbourhoods, where money could be spent in preserving picturesqueness, that a departure could be made from this rule. The only thing that architects could do under the circumstances, in this ordinary hum-drum work, was to try and make "reach-me-down" architecture as good as possible. He could not agree with Mr. Crane in deploring the manner in which art had been brought home to everybody in the present day; indeed, Mr. Crane was a standing example of one who had helped in that very work. Another thing that tended to the detriment of modern architecture and of art generally was the fact that our craftsmen were not designers; they had to carry out the design of some one else, and the designer necessarily did not acquire that knowledge of the use of tools which was so useful in designing, and which the old designers possessed in so marked a degree. It was no good, however, adding to the volume of woe which Mr. Crane had poured forth. He only hoped some of the members would be able to throw a little light upon this gross darkness.

Mr. William White, F.S.A., proposed a vote of thanks to Mr. Crane for his interesting lecture. The members had been accustomed to have rather practical subjects brought before them at these meetings, but that evening they had been carried far above practical matters, to the theories and foundations of art. Mr. Crane had lamented that art was at a very low ebb, but it seemed that the origin of his complaint was, for one thing, in the marvellous increase of population, the vast necessity for the support of the people, which presented so wonderful a contrast to the old times when things grew up gradually, and when there was, as it were, the growth of the individual. The artists of those days framed the schools of art to which the Chairman had called attention, and which schools formed the bases of development for centuries. The art of the Mediæval craftsman was wholly traditional, but was not necessarily stagnant. Art was transmitted in two distinct modes; in the one case by the development of scientific principles applied to the art, and in the other case it was wholly, or almost wholly, traditional by rule, and not by principles. The growth of art all through the Middle Ages in Europe was the growth of style from one century to another; whilst there was reason for believing that in India, China, and other Eastern countries it was a tradition of rule. Hence it was that they could see the exact reproduction as far as the principles and design were concerned, in carpets, curtains, and fabrics of every description, continued from century to century, almost the same. But when he spoke of the development of art through schools by the application of science, it was most evident that that was the case from the early times of the Greeks down to the fifteenth century. The geometrical proportions, systematically carried out by the Greeks in all art buildings, as demonstrated by Professor Hayter Lewis, Mr. Penrose, and others, would clearly show that, and if they were to look for the development of art at all, they must not be crammed with all that they were to learn *ab initio* from outside, so to speak. Here they were put into the position of what was termed education for art, everything being instilled into them by that means. Some could be taught, and others could not. The man who was an artist could be taught, and he would evolve from his own mind, from his own life, and from applications of nature, that which it was in his power to produce, while another man was unable to do it. The only way of growing towards this was through the schools of art, if they were but carried out in a more theoretical way,—having everything taught by precedent. He did not believe for a moment they would arrive at the development of art through any amount of federal life, or communistic society. The ideas giving rise to the communistic, social, and federal life, arose more, as he had said, from the enormous increase of the population, and the necssities of life, than from what was sometimes called the "robbery" of those who appropriated the good things to themselves.

Mr. F. T. W. Miller, in seconding the vote of thanks, remarked that the lecture turned more on the art of architecture than on "The Architecture of Art." There were two things on which he would join issue with Mr. Crane. The first was a sort of reference to the idea that under free and communistic governments, republics, and so on, great works were and would be produced. Whether they would be produced, time only would show, but that they had not been produced in the past was easily demonstrated. All the great works of the artists of old, whether in the shape of architecture, sculpture, painting, or poetry, had been produced under despotic governments. This was the case with Venice and the whole of Europe during the Middle Ages, when art culminated and the bud developed into the flower. The flower had since gone to seed, from which possibly might rise again a more glorious blossom, though not in our time. Then, again, Mr. Crane, having made several artistic wails, seemed to wish that they should go back to the manners of the Middle Ages. He (the speaker) used at one time to imagine that the men of bygone ages were somehow or other of a higher, better, and nobler type than the present class of persons who walked about in 40s. suits. He had abandoned that idea long ago, and believed there was as much "jerry building" in the Middle Ages as now, only the "jerry building" had disappeared, leaving merely the strong and stately fabrics. He did not believe men were any better in the old times. Art was always changing, and must ever do so with men's situations and needs. They had been passing, during the last forty or fifty years, through a strange experience of human life; they were in it now, and so were not well able to judge of it. It would rather be for the men of future generations to do so. Had the old masters been under the present condition of things would they have done better than the men of to-day? He very much doubted if they would. The men of to-day were in the rush and traffic of a mechanical and scientific age, and art had to stand by; but that it was dead he for one did not believe.

Mr. W. Randolph did not believe that any nations had ever set themselves to be picturesque; they were so, but it was those who came after who had discovered it. He could not agree with some of the rather heretical propositions of the last speaker. The Middle Ages, in spite of certain superficial abuses, were, as Montalembert said, bristling with liberty. No doubt there was building then which was not so good as that which had come down to the present time, but in Bruges, Lubeck, and Nurnberg common-place Mediæval buildings could yet be seen. Of course, the monumental architecture was more splendidly done, but he believed that in those days everything was honestly and well done. If artistic unity depended on social unity, this itself depended on religious unity.

Mr. H. O. Cresswell remarked that a reference to the "jerry builder" always sufficed to raise a laugh in that room, but he believed if there were no "jerry buyers" there would be no "jerry builders." When a man desired to have a magnificent house fitted with all the mode rnrequirements for half of what he ought to pay then the "jerry builder" did his best to supply him, cutting out in the thickness of the walls what he supplied in extra accommodation.

Mr. Leonard Stokes said that the tone of the paper seemed to be that of a lament that more time was not devoted to each individual object, but it should be remembered that architects nowadays had a very great many things to attend to. In fact, they were expected to do too much and to know all about every trade from the beginning to the end of a specification, and as much, of art as came into it. That was the reason why the specialists had such a great pull over the architects. The paper, although a little dismal in tone, was a most admirable and interesting one. The members would do well to take it to heart and endeavour to spend as much time as they could over the various things they had to do, and not scamp their designing in the way that builders scamped the execution.

Mr. Barrow thought that if architecture and art were now in their decline, it was owing to pecuniary causes. The architect or artist had so much to do for his money that he could not devote his time to the beauties of his art. Hence it was, he believed, in a great measure, that architecture are not so brilliant as in the old days, when great men were set aside for erecting cathedrals and public buildings. Art might be revived again if money could only be dissociated from it, and if every man who had the necessary taste could be allowed to devote himself to it, without thinking of the pecuniary return.

Mr. Francis Hooper expressed a doubt whether the cause of art would be furthered by the propagation of socialistic theories. A communism amongst the workers of various crafts was desirable, embracing both employers and employed, but in Classic and Mediæval times the patrons of art were found amongst the highly educated and wealthy members of the community. As to the lack of individuality in design now so lamented in what was termed artistic work, much was due to the ever-extending use of machinery which had surplanted the handicraft of the past. A motive power without intellect was at the root of many troubles. That, however, might be stigmatised as the abuse rather than the use of machinery. For to it we owed much work which but for its aid would be either too expensive or too scarce for the enjoyment of the masses.

Mr. Max Clark thought that if they, as architects, devoted the greatest amount of energy they possessed to the work in hand, they would have made one step towards what might be called socialism.

The vote of thanks was then put and very cordially received.

Mr. Walter Crane, in replying, said he was glad that his paper had evoked so many expressions of opinion. He was sorry, however, to have heard it termed a lament without any grounds of hope. The members had even seemed to think that he regretted the lapse of Mediæval habits and customs, but that was not exactly his meaning. He had pointed here and there to periods of history which he thought had the advantage, but he had no desire to live in any other age than the present. He was certainly very far from being the hopeless person some of them had imagined. He had also been taken to task for what were termed his Socialistic views, but he quite realised that no single man was answerable for the present state of things. It was the result of a course of evolution, which he who ran might read; no one could alter it at once, and he did not pretend to offer a solution which any one might put in his waistcoat pocket. He would rather be quite satisfied if people would think it out for

* Printed *in extenso* in *Builder* last week, see p. 313, *ante*.

themselves, but he believed that nothing short of a complete reversal of things would set them right. Matters had now got to such a pitch that art must certainly go down the inclined plane which would end in extinction. It was all very well to say that some ages were scientific and others artistic, but as long as a man was a man he had feelings and desires which could only be expressed in or gratified by art. A speaker had said that the great manifestations of art had flourished under more or less despotic governments. Something might be said on both sides, but there was a great deal of freedom of one sort or another in the times he had referred to. It was quite true ancient society was founded on a system of slavery, but the present system involved a worse slavery than the ancient one. The workman was now called free, and so he was in a sense; but unless he was prepared to take a wage that would barely keep body and soul together, he was free to go somewhere else, which meant starvation. Then there was nothing nowadays that could approach the splendid halls built by the Mediæval guilds. It might be a fact that there had been "jerry-building" in those days, and that it had disappeared since; but he congratulated himself on the fact that a great deal of modern London certainly would disappear. He had pointed out that one of the disadvantages of the artistic designer of the present day was that he was too crowded. Inventions kept coming in with a rush, and it was impossible art could keep pace with them. There must always be a distinct line where machinery came in and did its work well and beautifully, and where it was out of place. He had no objection to machinery; indeed, it would be absurd of him to say so, because so much of his work was carried out by it. At the same time, if there were time and remuneration given, it would be better to do all pleasurable work by hand. He was the last to despise the bringing of art before the million, but he objected to the spurious imitation and counterfeit which passed for art in this connexion. Altogether, he considered, that the general drift of the discussion seemed rather to confirm him in what they might deem to be his wrong-headedness when he said that there was more than one screw loose in the present state of things.

THE INSTITUTE OF BUILDERS,

THE third annual dinner of the Institute of Builders was held on Tuesday evening, in the Ball-room of the Hôtel Métropole. There was a large company present, and the visitors included:—Mr. L. H. Isaacs, M.P., Mr. Thos Blashill (Superintending Architect of the Metropolitan Board of Works), Mr. J. C. Bell, C.C., Mr. Chas. Bird, Mr. A. Bolding, Mr. W. B. Brown, Mr. H. D. Davis, Mr. W. Donaldson, C.E., Mr. J. Dunn, Mr. B. Emanuel, Mr. H. R. Gough, Mr. J. Hamilton, Mr. L. J. Maton, Mr. Jas. McMillan, Mr. Jno. McMillan, Mr. Alex. Mortimer, Mr. D. Murray, R.S.A., and Mr. Thos. M. Rickman. The following members were present:—Mr. W. J. Adamson, Mr. H. H. Bartlett, Mr. W. Brass, jun., Mr. J. M. Burt, Mr. G. Burt, jun., Mr. J. Clemence, Mr. Frank Clemence, Mr. J. W. Clemence, Mr. J. T. Chappell, Mr. W. C. Chappell, Mr. W. A. Colls, Mr. H. C. Dove, Mr. F. J. Dove, Mr. C. Fox, Mr. J. Grover, Mr. W. Hill, Mr. S. Hunt, Mr. E. S. Henshaw, Mr. J. A. Hunt, Mr. Frank Kirk, Mr. Ellis Marsland, Mr. Frank May, Mr. P. Munday, Mr. Neill, Mr. Thos. Patrick, Mr. G. S. Pritchard, Mr. R. S. Parker, Mr. Jas. Randall, Mr. T. F. Rider, Mr. Roberts, Mr. W. Shepherd, Mr. J. B. Simpson, Mr. Scrivener, Mr. R. J. Waller, Mr. C. B. Waller, and Mr. S. Wheeler.

The President, Mr. J. Howard Colls, occupied the chair.

The usual loyal toasts were proposed. Mr. Dunn, Chief Constructor, replied for "The Navy," and Major Waller for "The Reserve Forces."

The Chairman next proposed "The Houses of Parliament," for which Mr. L. H. Isaacs, M.P., responded.

Mr. Fredk. J. Dove proposed "The Architects," coupled with the names of Mr. Thomas Blashill and Mr. Hugh Roumieu Gough.

Mr. Blashill, who was very cordially received, said that although now severed from his connexion with builders to a great extent, it gave him great pleasure to look back on his past career, and he thanked Mr. Dove for the kind way he had spoken of him, and thanked all present for the reception he had met with.

The toast of "Art and Literature" was proposed by the Chairman, and responded to by Mr. David Murray, R.S.A., and Mr. Charles Dickens.

The Rev. Joseph Harris, M.A., in an amusing speech, responded to that of "The Visitors."

"The Surveyors," having been proposed by Mr. Robert Neill, junior, was briefly replied to by Mr. Thos. M. Rickman.

The Chairman then proposed "The Institute of Builders," which was enthusiastically received.

Mr. Thos. F. Rider proposed the health of "The President," saying how pleased he was to see the son of his old friend, and one of the most respected men in the building trade, occupying the important position in which Mr. Colls now was. He congratulated the members on having such a popular man to follow Mr. Stanley Bird, whose name was frequently mentioned, and whose absence was generally regretted.

Mr. Colls briefly responded, thanking those present for the kind reception they had accorded him.

SION COLLEGE.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

THE second Saturday afternoon visit of the Architectural Association was made on Saturday last to the new Sion College on the Victoria Embankment. The party was met by Dr. Milman, the librarian, who gave a short account of the foundation and then showed the various parts of the building. Sion College was founded by Dr. Thomas White, 1626. He was of a Bedfordshire family, born in Temple parish, Bristol, and was Vicar of St. Dunstan's-in-the-West, Treasurer of Salisbury Cathedral, a Canon of Christ Church, Oxford, and of St. George's, Windsor. He died in 1624, and his executor, John Simson, rector of St. Olave's, Hart-street, obtained the charter under which the College was founded which was slightly different to the plan devised by Dr. White in his will. The College was designed to be, to the clergy of the London parishes and those parishes whose boundaries touched the walls of the city, what the City Companies were to the various trades they represented. The original number of its Fellows was 100. After the Fire of London this was reduced to seventy. They were to meet together to encourage "Truth in doctrine, love in conversing together, and to repent such sins as do follow us as men." The library, which is now the chief glory of the College, was not part of the founder's scheme, but was formed by the executor, John Simson, and fostered by public benefactions. From 1710 to 1836 the library received, under the Copyright Act, a copy of all books published. When the new Copyright Act was passed this was abolished, and a Government grant of 324*l.* 15s. 2d., which is paid annually still, substituted.

The college was also a hospital for ten poor men and ten poor women. This has been abolished, and annuities given to forty old people instead. The original building of the college in London Wall occupied the site of the priory of Elsinge Spital, which was a refuge for the homeless poor of London. The extent of the ground was somewhat under three-quarters of an acre, and the original cost was in 1624, 2,450*l.*; when recently sold it realised nearly fifty times that amount, viz., 91,288*l.* The original building, which consisted of the almshouses for the twenty inmates, the library, and the president's lodging, was destroyed by the Great Fire, and rebuilt on nearly the old lines at a cost of 3,300*l.* The work was very badly done, and in consequence, in 1800, a sum of 3,624*l.* 9s. 4d. was spent in repairs; but, with all this outlay, the buildings were so defective that when the pulling down was commenced the president's lodge collapsed.

The present building on the Thames Embankment stands on a plot of ground, 75 ft. frontage, by 100 ft. in depth, with an easement over the District Railway. The accommodation provided consists of a large meeting-room, T-shaped on plan, with an arrangement for dividing it into two rooms; this is panelled with the old oak panelling brought from the old buildings. The carved chair used by the president was made out of a plane tree which grew on the old site. On the west side of this room is a council-chamber, the east side being taken up with the staircase, &c. At the rear are the book-rooms under the library, of which there are two stories, and underneath in the basement is a well-appointed kitchen. The pious founder, being fully alive to the value of public dinners, also enjoined that before the dinner the Fellows should listen to a painful and godly Latin sermon, but we believe that this custom is not often observed now. The library extends the whole depth of the site, and in addition there are librarian and sub-librarian's rooms, and two other rooms over the entrance-porch and staircase. The library provides accommodation for 65,000 books, the present library consists of about 35,000 books. The new buildings cost:—Foundations and damp-courses, 2,136*l.* 15s.; superstructure, about 19,823*l.*; fitting, including gas, 2,894*l.* 10s.; total, 24,854*l.* Mr. A. W. Blomfield, M.A., is the architect.

The party, after going over the building, proceeded to the St. George's R.C. schools, Westminster Bridge-road; Mr. Leonard Stokes, the architect, conducting the members over the building. The schools are for 800 children, and are arranged on three floors. The internal face of the walls is covered with Cliff's salt-glazed bricks, which give a very pleasing effect, and form a most durable surface. The floors are laid with Duffy's solid wood block flooring, and the treads of the staircase are made with end grain blocks. The rooms are heated with Manchester grates and ventilated with Tobin's tubes.

THE CLERKS OF WORKS' ASSOCIATION OF GREAT BRITAIN.

ANNUAL DINNER.

THE fourth annual dinner of this Association was held on Monday evening last in the Venetian Saloon of the Holborn Restaurant. Professor T. Roger Smith was in the chair, and there was a very large attendance of members and friends.

The usual loyal and patriotic toasts having been given, Mr. Aitchison replying on behalf of "The Army, Navy, and Reserve Forces,"

Mr. Wilkinson proposed "The Architects and Engineers," and in doing so said the members of the Association all felt it to be a great honour to have Professor Roger Smith in the chair on that occasion. With the toast he coupled the name of Mr. Banister Fletcher and Mr. W. D. Scott Moncrieff.

Mr. Banister Fletcher, in responding on behalf of "The Architects," amusingly and graphically described the troubles of architects, and especially of young architects engaged in superintending the erection of their first buildings. Those difficulties were very often caused by the unreasonableness of their clients, who perhaps wanted a guinea's worth for a pound. But from whatever cause architects' difficulties arose, they (and especially young architects) were often much indebted to their good friends, the clerks of works, and he could only express the hope that the Association would continue to flourish.

Mr. Scott Moncrieff, on the part of "The Engineers," also replied, contending that architects and engineers were associated in the toast as they ought to be in actual practice, and as they very well might be without jealousy. The assistance of the engineer, and especially of the mechanical engineer, might with advantage be enlisted by architects, particularly in regard to details of sanitary appliances and fittings, although architects might make themselves better acquainted with those details by studying Mr. Hellyer's admirable book.

Mr. Birtchnell next proposed "The Surveyors, meaning thereby, as he said, the quantity-surveyors,—the surveyors who understood building construction, and not the auctioneers who called themselves "surveyors." He spoke of the responsibilities of quantity-surveyors, and expressed it as his decided conviction that the bill of quantities ought to form part of the contract. With the toast he coupled the name of Mr. W. E. Stoner.

Mr. Stoner said that when he undertook to respond to that toast, he did so conditionally on there being no more august representative of the profession present, but, as their honoured friend Mr. Rickman was there, he should, by the Chairman's permission, ask Mr. Rickman to join him in responding to the toast, but before doing so he would take occasion to endorse what Mr. Banister Fletcher had said as to the cause of building disputes and difficulties. The cost of building was not elastic, though the "wide" tendering so frequently seen led the public to suppose so. For instance, a rod of brickwork, properly and decently executed, cost about as much now as ever it did. He fully endorsed Mr. Birtchnell's opinion that the bill of quantities ought to form part of the contract.

Mr. Thomas M. Rickman, in replying, expressed the great pleasure it afforded him to be present. Whether they were architects, engineers, or surveyors; builders, clerks of works, or foremen; whether they distributed or manufactured building materials, they were all engaged in the art of building, in the exercise of the faculty which differentiated the human being from other creatures, and he felt assured that they were one and all desirous of properly performing their several parts in the work.

The Chairman, in proposing "Success to the Clerks of Works' Association of Great Britain," said he felt very much indebted to the officers and committee for having asked him to preside on that occasion, as it gave him an opportunity of testifying to the great importance of an association which had for its objects the promotion of the well-being of so

very necessary and valuable a class of men as clerks of works. One great object of them all, architects and clerks of works alike, was the promotion of good building. If there were no clerks of works and no architects there would probably be quite as much building going on as there was now, but he ventured to think that it would not be quite so well done. Building as a business or trade was not only one of the great callings which occupied the people of this country, but it differed in one very important respect from other callings. The erection of a building called for a large amount of thought and calculation, from its very inception to its completion. There was probably no work in which manual labour was so indispensable as in the erection of a building; machinery could do very little in it beyond the working of some of the woodwork and the dressing of some of the stone. From the very nature of the operation of building, manual labour had to be largely employed, and that labour, whether skilled or unskilled, had to be directed and controlled by architects and clerks of works, especially by the clerk of works, who was always on the spot. It was very necessary that the workmen in the various trades concerned in the erection of a building should be induced to do their work with some regard to the requirements of the workmen who came after them. Having defined the three essential qualities in a clerk of works to be (1) a perfect knowledge of materials and workmanship, (2) thorough honesty, and (3) tact in setting everybody right,—from the architect to the builder's foreman,—without offending them, the Chairman, in conclusion, expressed the hope that every clerk of works present would prove himself to be a "brick," and that they would all be consolidated together by the Association in good "English bond." As a few courses had already been laid, he thought they might now "grout" the work with a little liquid mortar by drinking to the success of the Association.

With the toast was coupled the name of Mr. F. Dashwood, the secretary, who, after stating that the Association continued to progress, nineteen members having joined during the past year, bringing the total up to 115, made a humorous speech, which purported to be his experiences as secretary of another and very different society,—"The Pimlico Branch of the Peaceable Patriots."

Mr. Woodley, in proposing "The Honorary Treasurer," expressed the great services which that gentleman (Mr. John Oldrid Scott) had rendered to the Association from its very commencement. Mr. Scott being unavoidably absent, Mr. Dashwood said a few words in explanation.

The other toasts were, "The President, Vice-President, and Committee," proposed by Mr. Goymour Cuthbert, A.R.I.B.A., and replied to by Mr. Girling, the President; "The Press," proposed by Mr. Dillon, and responded to by the representative of the *Builder* and by Mr. Brady, the Editor of the excellent and useful *Journal* of the Association; "The Visitors," proposed by Mr. Griffiths and coupled with the name of Mr. Goymour Cuthbert; and "The Chairman," proposed by Mr. Old.

OBITUARY.

Mr. George Goldie.—We regret to have to record the death of Mr. George Goldie, the architect, which took place on the 1st inst. He was born in York in 1828, and was educated at St. Cuthbert's College, near Durham. He was first a pupil, and afterwards partner of Messrs. Hadfield & Weightman, of Sheffield. Afterwards he removed to London, and for many years practised in Kensington-square. Among his works the chief are the Church of St. Wilfred at York, the Pro-Cathedral at Kensington, the Cathedral at Sligo; the Pro-Cathedral at Durban, in Natal; the Pro-Cathedral at Middlesbrough; the Church of St. John of Jerusalem, in Great Ormond-street; Upsal Castle; and Weston Manor, in the Isle of Wight; and many Roman Catholic churches, convents, and secular buildings throughout England, Ireland, and Scotland. Latterly, he was the head of the firm of Goldie, Child, & Goldie, whose design for the new Church of St. James, Spanish-place (illustrated in the *Builder* for August 1, 1885), was successful in the limited competition which took place the year before last, and is to be carried out. The same firm produced a fine but unsuccessful design for the Brompton Oratory, which we hope to illustrate shortly.

The Transvaal Defence Memorial.—This memorial has just been fixed in St. Paul's Cathedral. It is a well-engraved brass of appropriate design. It measures 9 ft. by 6 ft., and is mounted on a black marble slab. It is said to be the largest brass in existence. It is placed, in the crypt opposite to the new memorial to the late Sir John Goss. The work reflects much credit on the engraver, Mr. Matthews, of Castle-street East, Oxford-street.

THE VENTILATION OF SEWERS.

WE extract the following passages from Professor Attfield's lecture on "The Laws of God in Relation to Health," which was briefly referred to by us last week.

"A serious source of contamination of the air of towns is to be found in the delivery of foul vapours from certain of the gratings at our very feet as we walk along our streets and roads. Now this subject is in several senses unsavoury, but it is one that affects the health of ourselves and the health and, perhaps, lives of our children. Therefore, no apology is offered for its introduction. Indeed, it is time that the public, men and women, too, should speak out strongly once for all on the matter. There is a general impression, and it is probably a right impression, that we have gone a little too far in the matter of sewer ventilation,—a little too far in a wrong direction. We are told, doubtless rightly told, that certain fevers which decimated the inhabitants of our towns up to a hundred or even fifty years ago, were probably largely due to the emanations from open urban ditches and similar collections of impurities. Well, we filled up the unsightly conduits, we avoided pestilential accumulations, and we substituted closed pipes and drains. But now, under some fancy that these tubular channels need ventilating, we adopt such mechanical contrivances as shall, or at all events, may and often do, bring the noisome vapour to the feet of adults or children at any moment as they walk past the gratings in the ground, or, much worse, bring it to the mouths and nostrils of boys and girls as they play near or perhaps actually peer into the grid-guarded caverns. True, we do not allow the contents of the passages to stagnate, as in old days, but so far as we ventilate them, that is, wash them out with air, and bring that possibly pestilential air to the lungs of human beings, to that extent we are making a retrograde movement towards the fever-breeding arrangements of pre-sanitary history. If our practice in this respect is right, we ought to increase the number of these gratings, or, indeed, have open ironwork along the whole length of these reeking aqueducts. But our practice, in my opinion, is not right. These mains do not need ventilation, or not as a rule. In our larger cities, wherever the horrid galleries are of a character to need workmen within them, ventilation is necessary for the sake of the men, lest they "be stifled in the vault to whose foul mouth no healthsome air breathes in." But such large mains generally run under wide roads whence the vapour can, through the gratings in the centre of the road, the more readily escape up into the atmosphere. At all events, ventilation then offers the minimum of evil. But why drains into which a man never goes, which are in fact too small for a man to enter, should be ventilated, is beyond my comprehension. Of course there must be no such pressure within them,—caused by the rush of flushing water or what not,—as to drive their vapour-laden air past the water-traps of our homes into the rooms in which we live. But some judiciously-disposed vent-pipes, such as are largely used already, opening above the ground level, but not near windows or other inlets of houses, will prevent that result. These vent-pipes (do not call them ventilating pipes, for there should be no such current of air through them as constitutes true ventilation) can be kept clear by an annual or semi-annual inspection, costing far less than the labour necessary for keeping clear the objectionable ground-level gratings. Some persons seem to be under the impression that poisonous gas is generated in these sullied-water passages, and that this gas needs to be diluted with as much air as can possibly be drawn into and out of the loathsome watercourses. Now the contents of these courses, in any properly-regulated district, are never allowed to stagnate long enough to produce gas; secondly, even stagnant stuff rarely produces a paltry few bubbles of gas; thirdly, such gas is probably harmless. No, the exact constituent causing harmfulness is not known, but what carries or conveys that constituent is the vapour of the smelling stream. The stream will saturate the air in the drains with its vapour just as a perfume will saturate the air in a scent-bottle, with its vapour. Ventilate the scent-bottle that is, arrange for a current of air to pass through the bottle, and what will happen? Each fresh quantity of air will soon be saturated with the vapour of the perfume, and as you drive out or draw out that quantity, fresh air will enter to be again saturated, and so on until you have dried out much of the perfume. Ventilate the polluted passages alluded to, and what happens? Each fresh quantity of air drawn in will soon be saturated with the vapour of the filthy fluid, and, as you drive out or draw out that quantity, fresh air will enter to be again saturated, and so on until you have dried out much of the fluid. There is not the slightest occasion to continue this loathsome, this repulsive vapour-carrying and perhaps fever-carrying process. There is not the slightest occasion to ventilate these treacherous tunnels. Fortunately, air is not often flowing at any important rate into or out of them, but that it is sometimes flowing out most persons who often pass the ground-level gratings can testify. To put the matter shortly and plainly. A sewer is like a scent-bottle, the longer you ventilate it, the longer it will smell,—while any fluid remains. Don't you want it to smell? No? Then don't ventilate it. Do away with the ground-level gratings altogether, except where men work in the gross galleries below; never attempt to ventilate, really ventilate, these tubes of turbidity; only where pressure is liable to accumulate place vent-pipes whose external orifices shall be far above the heads of the inhabitants of the town, and as far as may be from the windows of houses. What is required is *vent, not ventilation.*"

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE twentieth annual general meeting of the donors and subscribers to the funds of this Institution took place on the 24th ult., at the offices, 21, New Bridge-street, E.C., Mr. Wm. Robert Freeman (Messrs. John Mowlem & Co.) in the chair, supported by Mr. George Haward Trollope, the retiring President, and by Messrs. T. Stirling, E. Brooks, E. C. Roe, B. C. Fox, H. W. Parker, J. Robson, C. K. Turpin, F. H. Burchell, and other gentlemen. Several letters were read, one being from Mr. Arthur Cates, enclosing a donation of five guineas.

The Secretary read the report for the past year, which stated that notwithstanding the continued depression in trade, the income had been in excess of that for the year preceding, and had amounted in all to 689*l.* 1s.: being made up of 305*l.* 3s. 6d. in annual subscriptions, 300*l.* 2s. 6d. in donations, and 83*l.* 15s. in dividends on invested funds. On the other side, 307*l.* 10s. had been paid in pensions, and 30*l.* in temporary relief, these amounts being the largest as yet disbursed in any one year under these heads. A new presentation (the third) had been purchased (for 250 guineas) to the Orphan Working School, tenable for twenty-one years. The general expenses for the year had amounted to 99*l.* 19s. 8d. During the year three pensioners and one child had been elected; one of the former, however (Mrs. Chapman), had died in the month following her election. At the present time there were fifteen pensioners on the books, and three children at the Orphan Working School per presentation of the Institution. The annual dinner took place on the 23rd March at the Holborn Restaurant, Mr. G. H. Trollope presiding, when the substantial sum of 326*l.* 1s. 6d. was collected in response to the Chairman's earnest appeal. The committee in conclusion tendered their best thanks to Mr. Trollope, not only for his services in connexion with the annual festival, but also for his able assistance generally in promoting the interests of the Institution.

The Chairman, in moving the adoption of the report, expressed the pleasure it afforded him to take part in the business of the Institution, although he felt rather diffident in following so successful a President as Mr. Trollope. The Institution was now in its twenty-first year,—a rather important year; and it occurred to him that something special might be done to increase its usefulness. He certainly thought a great deal of good work had already been done, but it might, perhaps, have been expected that with such an active working committee there would have been a little more of increase. Perhaps one of the causes why a larger number of clerks did not belong to it was that it was not sufficiently known. One reason that had been alleged was that if a clerk subscribed, and afterwards went into another business, he would lose the benefit of anything he had previously paid. Another cause was, perhaps, the difficulty experienced by some clerks in paying as much as a guinea, or even half a guinea, at one time, whereas if some one were appointed in the several offices to collect small sums, so that the amount of subscriptions could be paid gradually, more clerks might be induced to join. At any rate, he proposed sending out special circulars, the expense of which he would bear himself, asking the builders to subscribe themselves, and also to lay the matter before their clerks, which he hoped would be attended with success, as

the Institution was a deserving one, and seemed to have ready to hand all the machinery for carrying out a great deal of good work.

Mr. Thos. Stirling seconded the motion, which was carried.

On the motion of Mr. Roe, the retiring officers were thanked for their services.

Mr. Trollope, in replying, said it quite seemed to him, from what had fallen from the proposer, that his poor efforts had not been unappreciated, and he could only say that what he had done had been a pleasure to him.

Officers for the present year were afterwards elected.

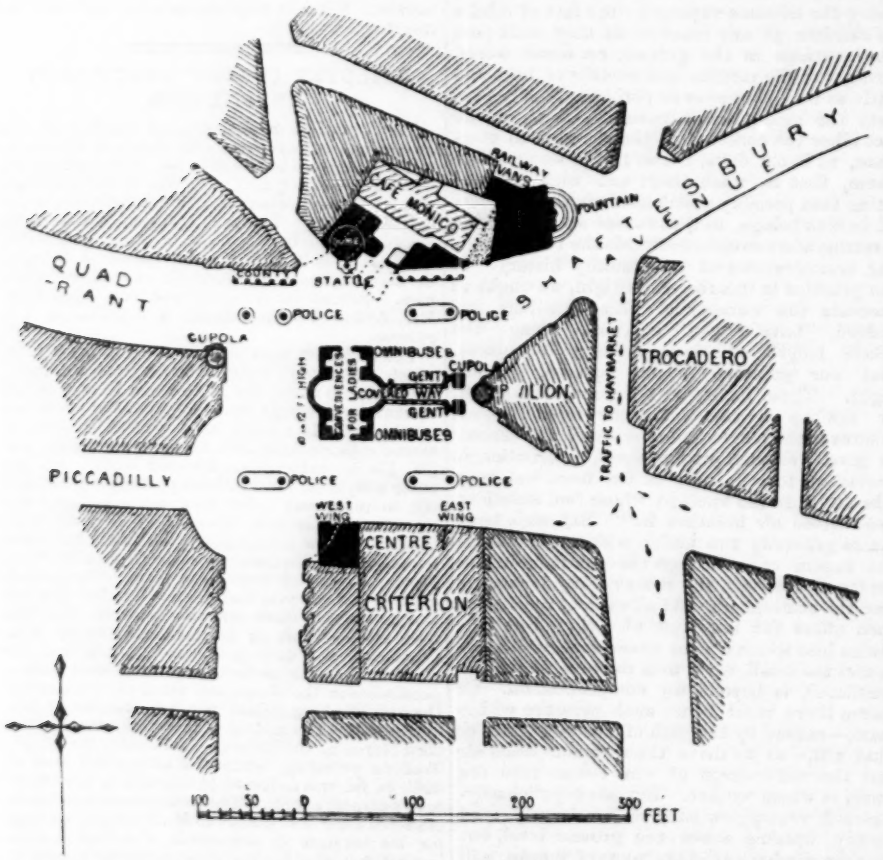
Mr. Brooks then proposed for adoption a new section to the Orphan rules, which, after some opposition, was carried in the following form, viz. :—

"That no more than two children of one family shall be receiving the benefits of the Orphan Fund at the same time. And should there be no presentation vacant at the time when an application for the second child be made, no further presentation shall be purchased until the Committee have another eligible candidate before them, when after due notice an election by ballot shall be declared."

The proceedings closed with a vote of thanks to Mr. Freeman for his kindness in presiding on the occasion.

PROPOSED COMPLETION OF THE OPEN SPACE BY PICCADILLY CIRCUS.

SIR,—Shaftesbury-avenue has connected St. Pancras and Bloomsbury with Piccadilly and Victoria, and a new service of omnibuses has naturally availed itself of the new route, while



the existing traffic from Regent Quadrant to Waterloo-place and Coventry-street is as crowded as ever it was. There are thus two lines of vehicles crossing each other at an obtuse angle, and yet obscured from each other by a solid promontory of houses just where they meet. Add to this the line of traffic east and west between Piccadilly and Coventry-street, besides a host of railway vans obscuring the view of foot-passengers, and we have only to wait for the London Pavilion Music-hall to be converted into a hospital, with plenty of accident wards.

There is, however, a pleasanter way of meeting the case, and that is by bringing the traffic under easy control.

In the *Builder* of October 24, 1885, a plan was suggested for converting the line of the former Tichborne-street into a pavement for foot-passengers only, and of re-erecting a portion of the former Circus as a valuable block of shops, and thus replacing the now lost symmetry of Nash's grand thoroughfare. When an open space, however, has been once gained, people are loth to see it blocked up again, even though the nation and the parish would reap very substantial profit from this scheme; and it would, no doubt, be better, as was then pointed out, to complete the open space by some further enlargement.

Several important but incongruous elements have to be dealt with in such an operation. We have three quarters of a Circus, two-thirds of a Criterion, the eccentric County Fire Office, and the "Pavilion" with three fronts facing as many different widths of thoroughfare. These things have come into existence, and there is no intention here of criticising any of them, but rather of seeing how they can be brought into harmony.

Now, in any scheme of this sort vested interests have to be considered. Hendrie's (the perfumer's) shop, in Tichborne-street, has already been dealt with. Next comes the Café Monico, chiefly hidden away in the background, but with a frontage to the street, and an access partly through a courtyard. By building on this courtyard and adding a second frontage, the capacity and publicity of the *café* would be improved. The accompanying plan shows how this can be achieved on a line of frontage set back so as to throw the Quadrant and Shaftesbury-avenue into one continuous sweep. This gets rid of the promontory that blocks the view from the Quadrant, and, at the same time, it throws the western angle of the Pavilion into the centre of a noble space.

The north side of this space has next to be considered. It is bounded east and west by Swan & Edgar's and the Pavilion. These could be easily emphasised by a pair of cupolas, such as Nash has placed on other buildings in Regent-street. Between these a centre line is struck towards the north obviously marking a site for the statue of Lord Shaftesbury, not isolated, but placed in front of the wall of a dominant central building. A repetition (let us hope in stone) of the County Fire Office to the east of this central building would complete the north side of the space, forming a composition which could be taken in at a glance from many points of view.

The three remaining quarters of the circus are awkward: a semicircle is far preferable. Let, therefore, the Criterion be completed, and absorb the south-eastern quarter of the Circus, to the manifest improvement of both. Mr. Verity's fine design would then be enjoyable as seen from the north, and the encroachment upon the Circus would be valuable as ground-rent.

Lastly, there is a demand for public "conveniences" which should be met if they can be made obvious, but not conspicuous. Delicacy has to be considered. A covered way is, therefore, suggested, to answer both as a waiting-place for omnibuses and an approach to ladies' lavatories; the gentlemen's conveniences being separately placed and approached.

The whole structure might be surmounted by a terrace for flower stalls, and yet be kept quite low; while its position would achieve the object first mentioned of checking the dangerous traffic in this crowded crossing.

Feb., 1887. EDWARD J. TARVER.

WORKING STUDENTSHIPS AT SOUTH KENSINGTON.

SIR,—I am directed to request that you will be so good as to allow me, through the medium of your columns, to inform manufacturers and others engaged in industries in which art is more or less concerned, that the Lords of the Committee of Council on Education have decided to make arrangements for the admission of a limited number of persons employed in those industries, to study in the South Kensington Museum, Library, and Schools, without the payment of any fees, for periods of from two to nine months according to circumstances.

Detailed rules with regard to these Working Studentships will be sent on application to the Department. Briefly, the conditions may be stated to be, that the designer or workman, for whom admission is sought, shall show that he has sufficient power of drawing and sketching to be able to profit by the opportunities afforded; that he is actually engaged in some art industry, and that the proprietors of the works in which he is engaged undertake to maintain him while he is studying at South Kensington. When admitted, the working student will be set, under direction, to study in the Museum and Art Library from examples relating to the industry in which he is employed, and he will also receive instruction in drawing and designing in the Art School, suited, as far as may be, to his special case.

My Lords have taken this step with a view to render the Museum of more special and direct use to the country, and they trust that the valuable collection of examples of applied art, which has now been brought together, may thus be more fully appreciated and taken advantage of by the directors of industry in the country.

J. F. D. DONNELLY.

Science and Art Department, Feb. 28.

THE LIVERPOOL CATHEDRAL COMPETITION.

SIR,—In signing the circular sent round by Mr. J. O. Scott and Mr. Seddon, I, in common with Professor Kerr and others, intended merely to ask for an opportunity of seeing the drawings in London, certainly not to attempt to upset the award of Mr. Christian.

I should have written to withdraw my name when I found others understood the special point of the circular to be a reconsideration of the award, but I noted that it had been modified. I still hope it will be the means of affording us the treat of seeing the competition drawings in London.

In proof of my own bona fides in the matter,—though it is otherwise of no importance,—I may say that, as far as I have yet seen, I quite sympathise with the conclusion come to by Mr. Christian, having known something of Liverpool in former years. C. F. HAYWARD.

Museum-street, Feb. 23.

THE IMPERIAL INSTITUTE COMPETITION.

SIR,—Without wishing to question for a moment the ability of the six gentlemen who have been selected to compete for the above, it does seem a hardship to the large number of architects in the United Kingdom that they have not the opportunity of showing their ability in so important and national an undertaking.

Following the precedent of the competition for the Houses of Parliament, the Government Offices, and the new Admiralty Offices, why should not the design for the Imperial Institute be thrown open to all? The result could not fail to be a success, besides being satisfactory to the profession, who, I am sure, feel aggrieved that the competition is at present limited to only six. If the drawings were limited to a small number, and to sketches only with plan to a small scale, the work of selection, with Mr. Waterhouse on the committee, would be a light one, as his practised eye would soon separate the "wheat from the chaff," and every architect who competed would have a satisfaction in feeling that he had had, at all events, a chance in the race, and would retain his design in years to come as his effort for the "Jubilee Building of Queen Victoria." The 1,200*l.* allotted as prizes might be divided into, say, twenty-four of 50*l.* each instead of six at 200*l.*, as now intended.

I feel sure that, if the Royal Institute of British Architects were to take the matter up and present a memorial in the terms I have suggested, the committee of the Imperial Institute would concur

in the proposal. It seems fitting and proper that so national a building should be dealt with in its inception on a broad and liberal basis. It would involve no extra cost, but be productive of satisfaction to a great many architects who now feel somewhat slighted at the course adopted.

LOYALTY.

VALVE AND "WASH-OUT" CLOSETS.

SIR,—The controversy between the "valve" closet and the "wash-out," again provoked by Professor Corfield's Lecture, does not seem likely to be settled just yet. The "valve" is objectionable as likely to run dry, and as having a space between it and the trap beneath for the generation and accumulation of foul air. The usual "wash-out" is objectionable in practice as very often failing to wash-out without a disgusting vortex, and in principle as having a trap beneath, almost out of sight, which very often does not clear itself; and having also a considerable surface of pipe leading down to the trap from the basin, which gives off exhalation in drying, and is consequently not so free from smell as a well-conducted closet ought to be. In these respects the usual "wash-out" is undoubtedly worse than a good "valve." It is but a mere trifle, if at all, better than a common hopper-pan, which is commonly deficient in the force and direction of its flush; and which likewise is not always clean in its use, but is otherwise quite as sanitary.

I believe that medical science requires the pan, whatever it may be, to contain a surface of water measuring 9 in. or 10 in. in diameter and 3 in. or 4 in. in depth within 7 in. or 8 in. of the seat. The valve closet certainly does fulfil these conditions perfectly, so that it has strong arguments in its favour as against a *defective* "wash-out." But defects are not essential to the "wash-out," although I know of only one which is free from those enumerated, and really fulfils the required conditions. It contains the requisite surface and depth of water within reasonable depth of the seat; it traps within the basin at its exit, and not beneath. It has no half-hidden pit of pipe beneath to accumulate the smell, and to exhale in drying. The basin is well rinsed in flushing. But, as your correspondent observes, all basins require to be kept properly and regularly cleaned. I am sure I shall never be satisfied with any closet which falls short of it in any of these respects.

WILLIAM WHITE, F.S.A.

Wimpole-street, February 27.

SIR,—I notice a letter from one of your correspondents, on p. 331, who seems to object to my views upon the "wash-out" closet, and who mentions that he was much struck at the prejudice shown against the wash-out water-closet in the discussion at the Architectural Association. Your correspondent states that "those who spoke have had no experience of the wash-out closet." I think you will allow me to state that it is just my experience, as a practical plumber and as an employer of some of the best plumbing talent known in London, which leads me to the conclusion I expressed at the meeting. In the few remarks I made I mentioned cases in point where closets had been fixed of the wash-out type many years ago, and had to be abandoned, and I may, for the information of your correspondent, say I have seen many score of closets on this principle, which, instead of being sanitary improvements, are, to my view, a perfect nuisance. I am glad, however, that I am not the only practical man who holds the same views on this important subject.

Your correspondent says "there is no action beneath the seat to corrode." Now, it is just the action beneath the seat I object to, and perhaps if your correspondent had attended the meeting he would have altered his views.

JOHN SMEATON.

Great Queen-street, W.C., Feb. 25.

*** We have also received a letter on this subject from Mr. S. Symes, architect, Lower Dominick-street, Dublin, who gives it as the result of his experience that there is no closet equal to the "wash-out," if of proper arrangement and construction. But we do not think that anything will be gained by the insertion of further letters in reference to the matter just now. Each side has had its say, and we have expressed our own opinion on the subject.

The "Lancaster" Pneumatic Door-Check.—This is the title of a new door-check which is certainly neat in appearance, compact, and readily fixed. It is claimed that the door may be held partially or entirely open for any length of time without injury to the check; that it effectually prevents the door from slamming; that it is capable of the most delicate adjustment; and that only one size is required for either large or small doors. From examination of the contrivance it appears to possess these qualifications, but we have not yet had one fixed on trial. When we have done so we may be able to say something more in its favour. It is made by Messrs. Anthony Bell & Sons, Lancaster.

The Student's Column.

FIELD WORK AND INSTRUMENTS.—X.

Surveying Instruments.

IX.—THE THEODOLITE (*continued*).

FIGURES 3 to 9 show elevations and details of the instrument illustrated in plan by fig. 1 of our last article. The telescope is fitted with achromatic glasses, the object of which is to remove the indistinctness of vision which would be caused by chromatic aberration within the telescope. We know by experience that the rays of light, unless acted upon by some external cause, travel in straight lines, but that when a ray of light passes obliquely out of one medium into another of a different density, it becomes bent or refracted, and its several component colours are separated and dispersed in a definite order, the red portion of the ray being the most refrangible and the violet the least refrangible. A ray of light, in passing obliquely from the atmospheric medium into a lens, undergoes a compound deviation, known as spherical and chromatic aberration, which it becomes the business of an optician to remove in the production of an achromatic telescope. The spherical aberration is obviated by making the lenses of suitable shapes, and the chromatic aberration by re-uniting the colours, so that a colourless image may be formed at the focus within the telescope. The object glass is fixed at the outside end of the inner tube, and is made of a comparative large size and of large focal length, in order that not only may sufficient light fall upon it to produce a distinct vision, but also that the rays of light may be the more accurately refracted. When a ray of light passes from a denser into a rarer medium, the angle of refraction is greater than the angle of incidence; but when the ray passes from a rarer into a denser medium, the angle of refraction is less than the angle of incidence. It is the property of convex lenses to diminish divergency, and of concave lenses to increase it.

The object-glass is formed of three lenses, held together and encircled by a thin brass ring, over which an outer brass ring is fitted. It consists of a double concave centre of light flint glass, with outside convex surface of green crown glass.

The colours, which are separated by the refraction of the first lens, are partly re-united by the refraction of the second or central lens, but the introduction of the third lens practically perfects the result.

After the lenses in the object-glass are adjusted in their relative position to one another they are secured by the makers with a pin soldered within the cell which holds them. A notch being cut in the edge of each lens, the object-glass slides upon the pin, and is thereby guided and secured in its proper position. The outer ring is turned closely round the edge and burnished in a lathe.

The eye-piece used is the Ramsden or positive eye-piece, consisting of two plano-convex lenses with the convex surfaces inside the eye-piece facing one another. The lenses are placed at a distance apart equal to half the sum of their focal length. In a positive eye-piece the focus lies beyond the lens which stands inside the telescope and therefore a positive eye-piece is adapted for use with instruments having fixed spiders' threads in the focus of the object-glass. In a negative eye-piece the two plano-convex lenses are placed with both the convex surfaces towards the object-glass, and hence the passage of rays from an achromatic object-glass after refraction in the glass of the eye-piece next the object-glass come to a focus within the eye-piece.

The line of sight within the telescope is technically called the line of collimation, derived from an old Latin word, "collimare," for which the word "collineare" is now substituted, and signifies to direct something straight at a mark ("con" together, and "linea," line). This line forms the optical axis of the instrument, and joins the optical centre of the object-glass with the intersection of cross hairs in a diaphragm plate, which are situated at the common focus of the object-glass and of the eye-piece, marked A. The diaphragm plate is sustained within the outer tube by four capstan-headed screws, by means of which the line of collimation is adjusted in a manner about to be described. Upon this plate, as shown in fig. 7, are fixed the "cross-hairs," intersecting one another within a circular hole in the centre of the plate, and consisting of spider's lines, one horizontal, two vertical, and two deviating slightly to opposite sides of a central vertical line, arranged so as to define a central point as well as to guide the eye in both a horizontal and vertical direction. The web used is that of a common garden spider, not the house-spider. The house-spider spins his web in sheets, but the spider found in gardens during the summer and autumn spins his web in geometric patterns formed of thin cords. These webs may be obtained by bending a piece of wire in the shape of a two-pronged fork, with a space of 2 in. or 3 in. between the prongs, and turning it over in the hand while the spider is allowed to drop from one prong to the other, so as to collect the line of web formed by the spider in the fall. These webs can then be readily affixed to the diaphragm-plate in their proper position. The short eye-piece, as shown in fig. 6, may be removed and taken to pieces for the purpose of wiping the glasses when required, but, as will be observed, when the eye-piece is withdrawn, the diaphragm plate is totally unprotected, and care must be taken not to destroy the cross-hairs on wiping the open end of the telescope. The object-glass may also be taken out and wiped with a soft silk handkerchief, or a soft piece of chamois leather, so as not to scratch the surface, but should be screwed back to the exact position it occupied before removal, as its optical centre is assumed to have been set true by the makers when fixing it into the telescope. To effect this, it is well upon receiving a new instrument from the makers to scribe carefully a mark across the ring, and the end of the inner tube to which the object-glass is attached, and then, after removal, to screw it back in its place, and observe that the lines so marked coincide. When the object-glass becomes dull, as will be found the case after working in wet weather, the best way to eliminate the moisture which may have gained access between the lenses is to take out the object-glass when packing up the instrument in its box, and wrap it up in a piece of clean blotting-paper, leaving it in a dry and warm place for a few hours. The dark glass cap supplied in the box with the instrument fits on to the short eye-piece, and is intended for use as a sun-glass.

One of the first adjustments requisite in the use of the telescope is known as the adjustment for parallax, a term derived from the Greek παρά (para), beside, and ἀλλάσσειν (allassein), to change or alter a little. A parallax is likely to lead to an inaccurate reading or observation, and can be detected when the observer moves his eye up and down or sideways when looking through the telescope. The eye-piece marked A is moved in and out of its socket until the cross hairs are not simply observed, but seen distinctly. This adjustment, which will obviate any apparent change in the position of an object caused by a slight change of position in the observer, may be best effected by directing the telescope towards a white ground, or towards the sky, so as to project the cross hairs upon a clear disc. It must be verified each time that the instrument is set up for use. As the socket which holds the eye-piece is screwed on to the near end of the telescope, it is advisable, in order to avoid unscrewing the socket when varying the distance of the eye-piece, to revolve it in the direction of the hands of a watch. When this socket is unscrewed, a diagonal eye-piece, consisting of two tubes with a rectangular elbow fitted in a separate socket, as shown in fig. 5, can be attached for observing great altitudes; a ray of light entering by the axis of one tube is reflected by the mirror centrally through the other tube. It will be observed that the image of the object viewed is inverted within the telescope when the short eye-piece is used, but by the substitution in the socket of an additional tube, shown in fig. 8, an erect vision may be obtained. The extra glasses and additional length of tube, however, cause a loss of light, and hence the long eye-piece is seldom used. After adjusting for parallax, the side milled head, marked B in fig. 1, is turned until the foci of the object-glass and of the eye-piece coincide. This is known by the distinctness of the image in the telescope. The clear vision is aided by the introduction of stop-pieces, shown in fig. 9, and fixed within the inner tube, as indicated by dotted lines in fig. 3. These serve to avoid reflected light, and to give

THE THEODOLITE

TRANSIT INSTRUMENT

PLAN OF LONG COMPASS BOX

FIG. 10

SECTION

FIG. 11

DIAGONAL EYE PIECE

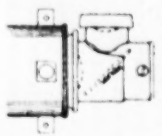


FIG. 5

FIG. 6

EYE PIECE

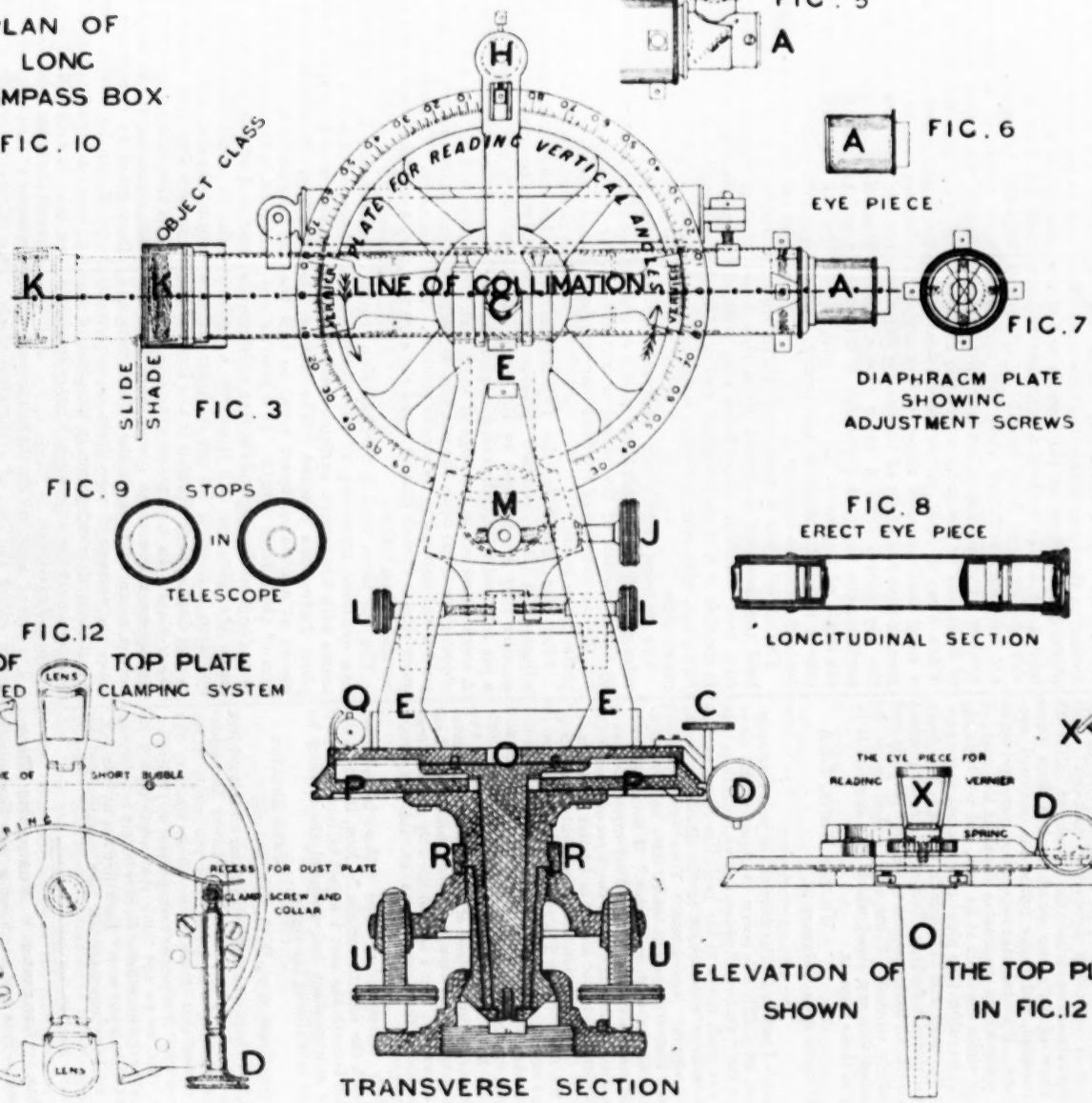


FIG. 3

FIG. 7

DIAPHRAGM PLATE SHOWING ADJUSTMENT SCREWS

FIG. 9 STOPS

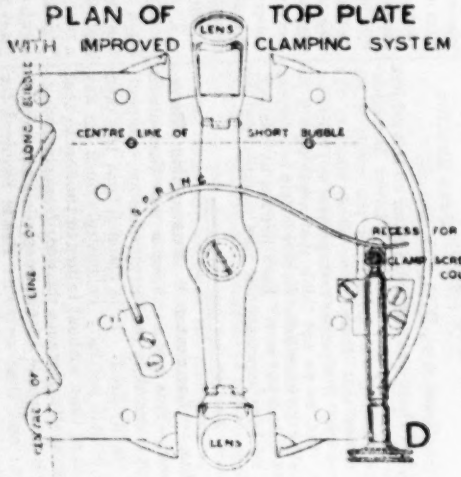
FIG. 8

ERECT EYE PIECE

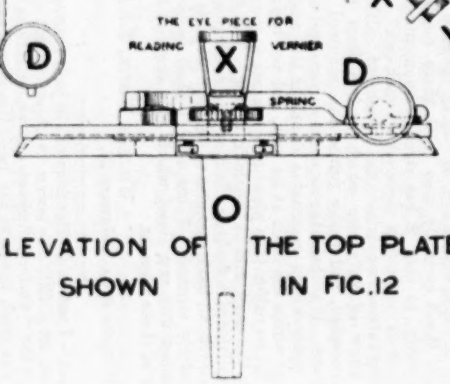
LONGITUDINAL SECTION

FIG. 12

PLAN OF TOP PLATE WITH IMPROVED CLAMPING SYSTEM



TRANSVERSE SECTION



ELEVATION OF THE TOP PLATE SHOWN IN FIG. 12

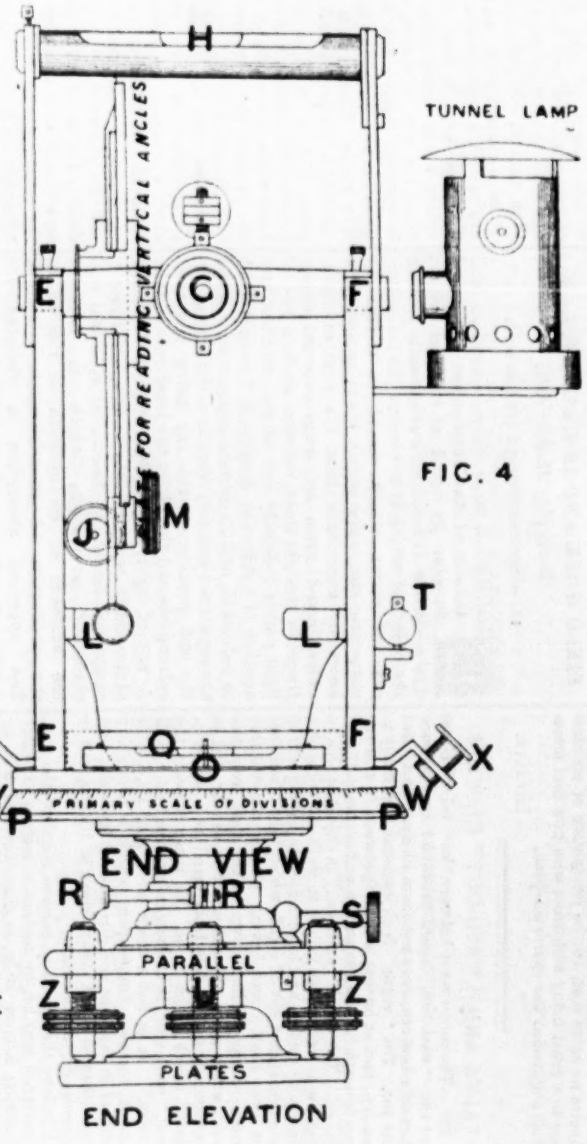


FIG. 4

END VIEW

END ELEVATION

sharp definition. They have holes of such diameters and are arranged in such positions that the only rays of light which reach the common focus of the object-glass and eye-piece at the intersection of the cross hairs in the diaphragm plate are those rays which are included within the cone of vision converged by by the object-glass.

The extent to which the inner tube can be moved in and out is indicated by the dotted lines in the diagram, and the slide shade marked K is intended for use when the sun is shining powerfully upon the object-glass, or when rain is falling. The nearer the point viewed, the further out must the inner tube be propelled so as to focus the object. The name theodolite is derived from the Greek θεάομαι (theaomai), or θεῶμαι (theomai), I see, or θέω (theo), I run, and δολικός (dolikos), long, and the instrument is specially adapted for long vision; but it is the maker's business to see that the telescopic action of the tubes is sufficiently perfect, in order that the line of collimation when adjusted for a long distance may be correct for a short one. Should wet work in between the two tubes in the telescope, as will be the case when using the instrument in showery weather, the inner tube must be continually moved in and out, and carefully dried each time until nearly all the moisture is removed, when the heat of a warm room will complete the drying. The inside of the tube and stops are covered with a dull black pigment, in order that no light may be reflected by its surface.

The magnifying power of a telescope is found by dividing the distance between the diaphragm and the nearest surface of the object glass by the focal length of the eye-piece. When looking throhgh the telescope from the eye end with the eye-piece removed, the eye being near the focus of the object-glass, the whole of the object-glass should be seen, and all parts of the intervening tube concealed,—otherwise the stops are not properly fixed.

Over the top horizontal plate are fixed two small spirit-levels at right angles to one another. They are adjusted in position by the makers by means of the capstan-headed screws attached to them. The long bubble attached to the telescope is seldom used in ordinary surveying. Great pains are taken by the manufacturers to make these bubbles sensitive. The inside or soffit of the level-tube is carefully ground with emery powder and water upon a brass rod which is bent to a slight curve longitudinally upon the inner upper surface, so as to insure the steadier action of the bubble when the tube is filled to the required amount. Spirit is found to be a more manageable medium in adjusting the bubbles than water. It is also less liable to freeze in cold weather. The grinding of the tubes may be so accurately executed as to enable the steady deviation of the bubble from the centre of its run, to register small angular deviations from the horizontal. It will be found that the length of the bubble is affected by temperature, and hence the glass tubes are generally graduated upon their upper surfaces to guide the eye in setting the bubbles level.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

2,302, Improvements in Water-closets, &c. R. B. Philipson.

According to this invention, the basin is of earthenware fitted with an outlet-pipe of lead. This lead or metal pipe is then secured with cement. The basin is so formed as to retain water in its lower part, and the lower part of the pipe is so constructed that its margin dips into the water in the basin, so that should the jointing fail between the metal and the earthenware, the escape of foul air is prevented by the water sealing at the lower extremity of the metal pipe.

2,671, Chimney or Ventilating Caps. C. Swindell and W. Clifford.

By this invention a chamber of an annular shape is used, the roof or curved sides of this annular chamber being continued to the centre so as to form a close top to the space enclosed by the inner wall of the chamber. The holes or slots for emission of the smoke or updraught of wind are guarded by louvres which deflect the current, all being arranged radially at a tangent round a common centre.

3,420, Basic Bricks. G. A. Jarvis.

The patentee mixes burned magnesian lime with fluos spar, silicates, and chlorides of different chemical substances, and then presses them by hydraulic power into moulds. The bricks are heated to a high temperature.

3,569, Wall Bonds and Damp Course. J. Dyson.

According to this invention, a brick is made in two parts, which in use are dovetailed together in the outer part of the wall. The part for the outer wall is burned as an ordinary brick; the other part, which will be the wall cavity, is glazed, is dished in the centre, and grooved. All water percolating through the outer wall, falling into this glazed groove, is carried down the cavity and into the earth. Thus the walls are made damp-proof, and the bricks act also as a bond to the wall.

4,239, Steps, Ladders, &c. A. W. H. Wood.

This invention relates to a combination of steps with the ordinary rung ladder. The parts are connected by means of a hinge fastened to the bottom of each side of the upper part and to the back of the lower part near the top rung. They thus fold close together, but when opened at an angle form steps, and may be fastened with a hook and staple or a metal loop, passing over the two parts above the hinge on each side.

6,426, Floors, Roofs, and Arches. W. Parry.

According to the invention, blocks of bricks, terra-cotta, or building stones are formed with vertical projections down or along one side of the bottom edge fitting into corresponding recesses or grooves on the opposite side of the stone or block. Thus the blocks register with each other in the process of building, and bind the work in such a manner that it forms a mass which the inventor claims to be incapable of being riven asunder or cracked.

NEW APPLICATIONS FOR PATENTS.

Feb. 18.—2,534, Stephens and Clark, Portland, Roman, and Other Cements.—2,535, Harcourt and Shaw, Apparatus for Closing Doors.

Feb. 19.—2,590, E. Poole, Roofing Tiles, to Prevent Stripping by Wind, &c.

Feb. 21.—2,637, J. Duckett, Water-closets.—2,659, R. Grocott, Fastening Knobs to Spindles.—2,668, Smith and Roome, Repeating Wood Carving and Shaping Machine.—2,685, R. Adams, Door-Closing Appliance, and Checks for Same.

Feb. 22.—2,716, S. Hart, Connecting Metal Pipes, &c., for Water or Gas.—2,725, D. Cheetham, Preventing Draughts, &c. from passing between the Sashes of Windows.—2,742, Shaw and Chittick, Flooring or Roofing for Warehouses, Bridges, &c.—2,785, W. Gaultier Stop Blocks for Doors, Gates, &c.—2,786, S. Wilding, Pressing Floor Boards together.

Feb. 23.—2,799, P. Stringer, Rim Latches.—2,805, E. Lloyd, Automatic Sash, Casement, and Door Fastener.—2,807, J. Shaw, Cooking Ranges.—2,817, H. Moore, Self-Locking Bolts.—2,820, A. Boult, Paving.

Feb. 24.—2,843, T. Kemp, Sanitary Water-closet Apparatus.—2,848, W. Kimberley, Plough and Sash Fillister Planes.

PROVISIONAL SPECIFICATIONS ACCEPTED.

679, J. Corsan, Producing Ornamentation on Wood.—1,083, B. Fryer, Fire Grates.—1,143, A. Butt, Window Fasteners.—1,147, J. & G. Shelvoke, Escutcheons for Keyholes.—1,219, W. Lunt, Door or Finger Plates.—1,899, E. Allwright, Cowl or Wind-guard for Chimneys or Ventilators.—850, R. Kenny, Earthenware Drain-pipes, &c.—1,024, A. Illidge, Indicator and other Fastenings for Doors.—1,362, J. Macintyre and Others, Kitchen Ranges.—1,493, J. & J. Wilson, Apparatus for Smoky Chimneys.—1,532, Woolldridge & Jones, Forming Floors.—1,990, G. Redfern, Constructing Harbours, Piers, Breakwaters, &c.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

2,758, J. Bale, Self-adjusting Waterproof Louvres for Ventilating Buildings.—4,962, T. Porter, Draught and Dust Excluder for Doors and Windows.—5,513, W. Walker, Cooking Ranges.—5,795, C. Gannaway, Ventilator.—5,820, J. Warwick, Manufacture of White Lead.—6,486, H. Price, Hopper Ventilating Casements.—15,552, H. Lowden, Roofing Tiles.—5,076, W. Lockhart, Sliding Sashes.—6,292, G. Sharp, sen., Chimney Top or Ventilator.—15,203, W. Kellogg, Sash Pulleys.—1,193, W. Eckstein, Ventilators.

Free Lectures at Carpenters' Hall.—The first of the present series of Free Lectures on matters connected with building was given on Wednesday evening last at Carpenters' Hall, London Wall. The lecturer was Mr. Banister Fletcher, F.R.I.B.A., Warden of the Carpenters' Company, who chose as his subject "English Carpenters and Foreign Competition." There was a large audience, who frequently applauded the delivery of the lecture, a report of which will appear in our next.

Polytechnic Science, Art, and Technical Classes.—We are informed that the Right Hon. the Marquis of Hartington, M.P., has consented to distribute the medals, prizes, and certificates to the successful students of the Polytechnic science, art, technical, and trade classes, on Wednesday, March 16th.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

FEBRUARY 22.

By DEBENHAM, TEWSON, & Co.

Euston-road—Nos. 268 to 274 even, and premises in rear, area 17,400 ft., freehold	£12,000
City—21, Addle-street, freehold, area 539 ft.	3,000
Stoke Newington—71, Albion-road, freehold	860
Harlington—Freehold house and fruit plantation, 11a. 2r. 15p.	2,650

By H. RUTLEY.

Hampstead-road—No. 18, Netley-street, 28 years, ground-rent 6*l.* 6s.	400
Edgware-road—20, 21, and 22, Burne-street, 32 years, ground-rent 5*l.* 5s.	550
Improved ground-rent of 10*l.* 16s., term 32 years	125
Portland place—29, Foley-street, 10 years, ground-rent 25*l.*	390
Camden Town—135 and 137, Arlington-road, 50 years, ground-rent 20*l.*	745

FEBRUARY 23.

By C. D. FIELD & SONS.

Blackfriars—1, Broadwall, copyhold	295
8, Queen's Arms-court, copyhold	215
61, Nelson-square, 18 years, ground-rent, 6*l.* 16s. 10d.	295

By BRIANT & SON.

Camberwell New-road—No. 213, term 17 years, ground-rent 5*l.*	160
Whitechapel-road—No. 249, term 197 years, no ground-rent	670
Kennington-cross—3 to 9 odd, Upper Kennington-lane, 18 years, ground-rent 48*l.* 8s.	730

By F. HARDS.

Greenwich—21 and 22, Egerton-road, 55 years, ground-rent 10*l.* 19s. 6d.	560
Clapham—Ground-rent of 25*l.* a year, reversion in 17 years	1,100
Ground-rent of 10*l.* a year, reversion in 42 years	480

FEBRUARY 24.

By GLASIER & SONS.

Soho—15, Old Compton-street, freehold	2,270

By FAREBROTHER, ELLIS, & Co.

Haymarket—17, Oxenden-street, freehold	1,560

By HARDS & JENKINSON.

Poplar—124, Brunswick-street, copyhold	220
Plaistow—19, Grange-road, freehold	295

By E. STIMSON.

Mile End—34, Harford-street, 30 years, ground-rent 2*l.* 10s.	205
Bermondsey—6 and 8, Stork's-road, 58 years, ground-rent 10*l.*	600
Wandsworth-road—Ground-rents of 39*l.* 8s., term 22 years	345
Edgware-road—1 to 64, Bowman's-buildings, 86 years, ground-rent 250*l.*	6,000
Lavender-hill—No. 83, term 85 years, ground-rent 8*l.*	500

By NEWBON & HARDING.

Tottenham—5 and 6, Parkfield-villas, 63 years, ground-rent 5*l.* 10s.	220
Islington—Ground-rents of 18*l.* a year, reversion in 47 years	563
21 and 23, Clarence-street, 50 years, ground-rent 12*l.* 12s.	685
Holloway—138, Hornsey-road, 55 years, ground-rent 8*l.*	365
51, Durham-road, 67 years, ground-rent 4*l.*	210

FEBRUARY 25.

By R. REID.

Paddington—31, Elnathan-mews, 78 years, ground-rent 8*l.*	300

By BLAKE, HADDOCK, & CARPENTER.

Croydon, High-street—The New Inn and premises, freehold	4,060

MEETINGS.

SATURDAY, MARCH 5.

Architectural Association.—Visit to the Church of Corpus Christi, Brixton-rise, and St. Mary's Church, Clapham. 3 p.m. (See advertisement last week.)

Association of Public Sanitary Inspectors.—Mr. J. A. Davenport, C.E., on "Rural Sanitation." (Town-hall, Westminster. 6·30 p.m.)

MONDAY, MARCH 7.

Royal Academy of Arts (Lectures in Architecture).—Mr. G. Aitchison, A.R.A., on "Balustrades." 8 p.m.

Surveyors' Institution.—Paper by Mr. T. W. Wheeler, Q.C., on "Dilapidations and the Legal Obligation to Repair." 8 p.m.

Society of Engineers.—Mr. E. Olander on "Bridge Floors; their Design, Weight, and Cost." 7·30 p.m.

Society of Arts (Cantor Lectures).—Mr. W. Y. Dent on "Building Materials." IV. 8 p.m.

London Institution.—Mr. Andrew Lang, M.A., on "Life in Homer's Days." 5 p.m.

Estate Exchange.—Annual General Meeting. 3 p.m.

Leeds and Yorkshire Architectural Society.—Mr. F. W. Wigfall on "The Philosophy of Bricks."

Victoria Institute.—8 p.m.

TUESDAY, MARCH 8.

Institution of Civil Engineers.—Further discussion on Mr. J. J. Webster's paper on "Dredging Operations and Appliances." 8 p.m.

Manchester Architectural Association.—(1) Paper by Mr. H. Talbot on "Ornament." (2) Nomination of Officers. 7·30 p.m.

WEDNESDAY, MARCH 9.

Royal Academy of Arts.—Mr. Reginald S. Poole on "Medals." 8 p.m.

Architects' Benevolent Society.—Thirty-seventh Annual Meeting. 5 p.m.

Society of Arts.—Mr. William P. Marshall on "Railway Brakes." 8 p.m.

York Architectural Association.—Mr. F. A. Camidge on "Building Law." 7·45 p.m.

THURSDAY, MARCH 10.

Society of Telegraph-Engineers and Electricians.—Mr. Desmond G. Fitz Gerald on "Reversible Lead Batteries and their Use for Electric Lighting." 8 p.m.

SATURDAY, MARCH 12.

Edinburgh Architectural Association.—Visit to Liberton Tower, Inch House, &c.

Miscellanea.

London Sanitary Protection Association.—The sixth annual general meeting of this Association was held on Saturday, at No. 1, Adam-street, Adelphi, Lord Chelmsford in the chair. It appeared from the report that the Association is in a fairly prosperous condition, the number of members having slightly increased, it standing at present at 1,144. During the past year the number of houses inspected for the first time was 398, and the result showed that, notwithstanding all the efforts made by various organisations, and especially by this Association, to improve the sanitary condition of dwelling-houses the necessity for continued and constant watchfulness is still as great as ever, since the percentage of houses classified as in a bad condition was slightly in excess of the average for the previous five years, being 59 per cent. for 1886, as against fifty-five for the previous five years. There are six classes recognised by the Inspectors, ranging from "very bad" to "very good," and it is the "very bad" class which has turned the scale in the manner shown. The report also pointed out the necessity of renewed inspections from time to time after a house has been put into good order,—a department in which much good work has been done. Mr. Timothy Holmes, the treasurer, read his report, which was very satisfactory.—Mr. Ellice Clark, Consulting Engineer to the Association, said he had had about 750 reports, prepared by the Inspectors, pass through his hands during the past year, and he was able to speak in the highest terms of the thoroughness and ability with which these reports were prepared. One of the inspecting engineers, Mr. Richards, had been appointed to superintend the sanitary arrangements of the Houses of Parliament, and Mr. Burton, the senior inspector, had just been appointed Professor of Sanitary Engineering at the University in Japan, so that the efficiency and ability of their officers was beginning to be publicly recognised. A general discussion ensued, in which Mr. Bateman, Miss Davenport Hill, Mr. R. B. Martin, and others, took part, in the course of which suggestions were made for endeavouring to enlarge the operations of the Association by undertaking the inspection of a smaller class of houses. On the motion of the chairman, seconded by Mr. E. C. Robins, F.R.I.B.A., the report and accounts were adopted.

Sale of Building Land at Upton.—On Monday evening Mr. Richard J. Collier offered for sale, at the Princess Alice Inn, Romford-road, Forest Gate, several plots of building land, situated midway between Upton Park and Forest Gate Stations of the Great Eastern Railway, and within a short distance of the main Romford road. The particulars stated that good roads, with a double system of drainage and kerbed footpaths, had been formed on the estate, and that both gas and water were laid on. There was a very large attendance. The number of plots named in the printed particulars was fifty-nine, but before commencing the sale the auctioneer announced that three of the six shop plots and twenty-six of the other plots had just been disposed of by private contract. He also incidentally observed that it was now some three or four years since any large sale of building land in plots had taken place in the immediate locality, but that there was now every prospect of building on an extensive scale being carried on in the neighbourhood. On the sale being proceeded with the shop plots, having frontages to an old parish road, known as Red Post-lane, and depths of 65 ft., were sold for 48*l.* each. The other plots, intended for the erection of private residences, having frontages of 15 ft. to Bristol-road (a newly-formed thoroughfare in the centre of the estate, upwards of 50 ft. in width), and an average depth of about 100 ft., were next offered, and were all sold at prices ranging from 33*l.* to 36*l.* each. The whole of the plots as advertised having been disposed of, the plots on the north side of the estate, seventy in number, were next submitted, when the shop plots facing Red Post-lane, were sold for 54*l.* each, and also several of the plots in Bristol-road, the last-named plots realising 33*l.* and 34*l.* each. The entire proceeds of the sale amounted to 2,960*l.*, and after the close of the public sale negotiations took place resulting in a further portion of the estate being privately disposed of for 3,300*l.*, making a total of 6,260*l.*

Acton Sewage Disposal Works.—At an ordinary meeting of the Local Board for the District of Acton, held at their Offices on Tuesday last, it was resolved to ask the Chairman, Mr. W. Roebuck, C.E., to lay the memorial stone at the Board's Sewage Disposal Works. The ceremony is expected to take place about the middle of this month. The works are being carried out from designs of Mr. C. Nicholson Lailey, Engineer to the Board, by Messrs. John Mowlem & Co., contractors, Westminster.

The Public Parks and Works (Metropolis) Bill.—The Works and General Purposes Committee of the Metropolitan Board of Works have resolved to recommend the Board that in the event of the Public Parks and Works Metropolis Bill not being successfully opposed upon second reading, an endeavour be made to amend the Bill so as to vest absolutely in the Board the Victoria Park, Battersea Park, Kennington Park, Bethnal-green land, Westminster Bridge, and the Thames Chelsea Embankment free from all debts and liabilities whatsoever, but without any claim on the part of the Board to the property outside the limits of the Battersea Park, or to the property known as the Westminster Bridge Estate, or to other properties not comprised within the limits of the before-mentioned public parks, land, bridge, and embankment, and that it be referred to the Works and General Purposes and Parliamentary Committees to give effect to this recommendation.

Artisans' Dwellings.—The second ordinary general meeting of the shareholders of the City and Central Dwellings Company, Limited, was held at the Registered Offices of the Company, No. 3, Newgate-street, last week. The Chairman, Mr. George Sims, in moving the adoption of the report and accounts, after having referred to the payment of the interim dividend at the rate of five per cent. per annum, spoke of the great success which had attended the blocks in Seward-street, St. Luke's, which the late Lord Mayor, Sir John Staples, had opened in June last year, and claimed that with regard to the plans, building, and sanitation, these blocks would bear comparison with any blocks in London or elsewhere. Every endeavour was being made to complete as speedily as possible the remaining blocks on this site, the eventual rent-roll of which would be upwards of 4,000*l.* per annum. He pointed out that the directors never held out promises of large dividends, believing that reasonable rents to the tenants, leading to a steady income from the blocks, resulted in a secure five per cent. The adoption of the report and accounts was carried unanimously.

The Sanitary Registration of Buildings Bill, 1887.—The Association of Municipal and Sanitary Engineers and Surveyors have issued a circular to the various urban sanitary authorities of the kingdom with a view of obtaining a census of opinion upon the provisions of this Bill as revised by its promoters, and calling attention to the frequent efforts of private societies and individuals to vary the Public Health Act without consulting the legally constituted authorities. At the same time, the Council point out what they regard as some of the defects of the Bill as at present drafted. For instance, by clause 7, which specifies persons and corporations to whom are to be granted licenses in sanitary science, Associate Members of the Institution of Civil Engineers, Members of the Institution of Civil Engineers of Ireland, of the Surveyors' Institution, and of the Association of Municipal Engineers, are excluded, thus omitting the very class of individuals on whom precisely similar work is now cast by the Public Health Act of 1875, and who have been specially selected by the legally constituted sanitary authorities. Again, it is further submitted by the Council of the Association that the sub-sections of clause 10 are, in reality, details of construction which should be left to be determined by the local authority themselves, and are not alike applicable to every district. The Council deprecate these spasmodic attempts to change existing laws, and urge on all sanitary authorities and their officials the necessity of calling the attention of the members of Parliament for their respective districts to such Bills, with a view of opposing any changes in the existing General Sanitary Law, which is not introduced by the Government or a legally constituted sanitary authority; and, lastly, the promoters are requested, before proceeding any further with the Bill, to call together representatives from those bodies that are interested and affected by its provisions, so as to confer together before a measure asking such a revolution in our sanitary legislation becomes law.

Liverpool Engineering Society. — The usual fortnightly meeting of this society was held at the Royal Institution, Colquitt-street, Liverpool, on the 23rd ult., Mr. John J. Webster, M. Inst. C.E., President, in the chair. A paper was read by Professor Hele Shaw. The author commenced by remarking that one result of all the elaborate researches and investigations upon the theory of the steam-engine had been to reveal the complex nature of the problem. It was true that the main features of the theory of this the most important of all prime movers had long ago been stated by Rankine and Clausius, but in spite of many new and interesting facts which further experience had revealed, there was a number of important points concerning which, at the present moment, great differences of opinion existed. To the careful testing of steam-engines, and the systematic way in which these tests had been carried out in recent years was due the clearer views now held on many points of steam-engine economy, and it was by continual work of this kind that the still doubtful points could alone be decided. The object of the paper was to try and place before the society a concise statement of the methods adopted, and the results obtained by those who had devoted attention to the subject, and this amounted, in point of fact, to a practical statement of our present view of the theory of the steam-engine itself. It was now recognised that the efficiency of the steam user or engine must be separately examined, and also that when possible the useful effect of the steam must be determined apart from the loss of friction in the mechanism of the engine. There were thus really three sets of separate efficiencies, the product of which represented that of the steam-engine as a whole. The author proceeded to discuss the determination of these under the three heads:—(1) The transfer of heat; (2) The transformation of energy; (3) The transmission of power, and illustrated the methods adopted by diagrams and actual results obtained by himself and other observers.

PRICES CURRENT OF MATERIALS.

TIMBER.	£. s. d.	£. s. d.
Greenheart, B.G. ....ton	6 10 0	7 10 0
Teak, E.I. ....load	9 0 0	14 0 0
Sequoia, U.S. ....foot cube	0 2 3	0 3 0
Ash, Canada ....load	3 0 0	4 10 0
Birch ,, ...	2 5 0	3 10 0
Elm ,, ...	3 10 0	4 10 0
Fir, Dantsic, &c.	1 10 0	4 0 0
Oak ,, ...	2 10 0	4 10 0
Canada	3 0 0	6 0 0
Pine, Canada red	2 0 0	3 10 0
,, yellow	2 5 0	4 0 0
Lath, Dantsic ....fathom	3 0 0	5 0 0
St. Petersburg	4 0 0	5 10 0
Wainscot, Riga ....log	2 15 0	4 0 0
,, Odessa, crown....	3 5 0	3 7 6
Deals, Finland, 2nd and 1st...std.100	7 0 0	8 0 0
,, 4th and 3rd	5 10 0	6 10 0
Riga	5 10 0	7 0 0
St. Petersburg, 1st yellow	8 10 0	14 0 0
,, 2nd ,, ...	7 0 0	8 0 0
,, white	6 0 0	9 0 0
Swedish	6 0 0	15 0 0
White Sea	7 0 0	16 10 0
Canada, Pine, 1st	17 0 0	27 0 0
,, ,, 2nd....	11 0 0	16 0 0
,, ,, 3rd, &c....	6 0 0	8 0 0
,, Spruce, 1st	8 0 0	10 0 0
,, ,, 3rd and 2nd	5 0 0	7 0 0
New Brunswick, &c.	5 0 0	7 0 0
Battens, all kinds	4 0 0	12 0 0
Flooring Boards, sq. 1 in., prepared, First	0 8 0	0 11 6
Second	0 6 6	0 7 6
Other qualities	0 5 0	0 6 0
Cedar, Cuba ....foot	0 0 3	0 0 3½
Honduras, &c.	0 0 2½	0 0 3½
Australian	0 0 2	0 0 3
Mahogany, Cuba	0 0 4	0 0 6
St. Domingo, cargo average	0 0 4	0 0 6
Mahogany, Mexican, cargo av.	0 0 3½	0 0 4½
Tobasco ,, ...	0 0 4	0 0 6
Honduras ,, ...	0 0 4	0 0 6
Maple, Bird's-eye	0 0 6	0 0 8
Rose, Rio .... ton	7 0 0	10 0 0
Bahia....	6 0 0	10 0 0
Box, Turkey ....ton	5 0 0	15 0 0
Satin, St. Domingo ....foot	0 0 6	0 0 10
Porto Rico	0 0 6	0 0 10
Walnut, Italian	0 0 4	0 0 5
METALS.		
Iron—Bar, Welsh, in London...ton	4 7 6	4 15 0
,, ,, in Wales	4 2 6	4 7 6
,, Staffordshire, London	5 10 0	6 0 0
Sheets, single, in London	6 15 0	8 10 0
Hoops ,, ...	6 0 0	7 0 0
Nail-rods ,, ...	5 15 0	6 10 0

METALS (*continued*).	£.	s.	d.	£.	s.	d.
COPPER—						
British, cake and ingot ....ton	42	10	0	43	0	0
Best selected	43	10	0	44	10	0
Sheets, strong....	50	0	0	51	0	0
Chili, bars	39	5	0	39	15	0
YELLOW METAL ....lb.	0	0	4 1/8	0	0	4 1/4
LEAD—						
Pig, Spanish ....ton	12	12	6	0	0	0
English, common brands....	12	17	6	0	0	0
Sheet, English	13	15	0	14	0	0
SPELTER—						
Silesian, special ....ton	14	7	6	14	10	0
Ordinary brands....	14	5	0	14	7	6
TIN—						
Straits....ton	102	0	0	0	0	0
Australian	102	0	0	0	0	0
English ingots	105	0	0	0	0	0

OILS.	£.	s.	d.	£.	s.	d.
Linseed ....ton	20	5	0	20	7	6
Cocoanut, Cochin	35	0	0	36	0	0
Ceylon	26	0	0	0	0	0
Palm, Lagos	22	10	0	0	0	0
Rapeseed, English pale	23	0	0	0	0	0
,, brown	21	10	0	21	15	0
Cottonseed, refined	18	5	0	20	5	0
Tallow and Oleine	25	0	0	45	0	0
Lubricating, U.S.	5	0	0	6	10	0
,, refined....	5	0	0	12	0	0
TURPENTINE—						
American, in casks ....cwt.	1	8	0	0	0	0
TAR—						
Stockholm ....barrel	0	15	0	0	15	6
Archangel	0	12	6	0	0	0

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
ottage Hospital, Ashburton....	The Committee....	Not stated	Not stated...	ii.
Public Room, Caistor	do.	Nil	do.	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Alterations and Additions to Club	Kingston Workmen's C.	W. H. Hope	March 8th	xx.
New Sewers....	Com. of Sewers....	*Official*	do.	ii.
Stone Paving	do.	do.	do.	ii.
Street Watering....	Strand Board of Works	do.	March 9th	ii.
Boring for Water Supply....	West Cowes Local Brd.	do.	March 14th	xx.
Erection of Cottages, Bromley	Sundridge Park Estate	W. H. Gibbs....	do.	xx.
Supply of Stone, Gravel, &c....	Hendon Local Board ...	S. S. Grimley....	do.	ii.
Broken Granite, Flints, &c.	Wimbledon Local Brd.	*Official*	March 15th	xx.
Paving Works....	Greenwich Bd. of Wks.	do.	March 16th	xx.
Cemetery Chapels and Wrought-Iron Fencing	Rye U. R. S. A.	do.	do.	ii.
Road-making and Paving Works	Hammersmith Vestry...	do.	do.	ii.
Additions to Inland Revenue Office, Brmnghm	Com. of H.M. Works...	do.	March 18th	ii.
Tar Pavement....	Mortlake Dis. High. Bd.	J. Medworth....	March 19th	ii.
Broken Granite and Flints	do.	do.	do.	ii.
Annual Contracts	Lewisham Bd. of Wks.	*Official*	March 22nd	ii.
Supplying and Laying Granite Curb	Grays Thurrock Locl. Bd	— Cobham....	March 24th	ii.
Erection of Infirmary	Eastbourne Union	F. G. Cooke	do.	xx.
Erection of Water Tower	Liverpool Corporation	G. F. Deacon....	March 28th	xx.
Paving, Kerbing, and Channelling Works ...	Acton Local Board.....	C. N. Lailey	March 31st	ii.
Construction of Sewers	do.	do.	do.	ii.
Electric Tramways, Halifax	....	M. Holroyd Smith	Not stated...	xx.
Sewage Disposal Works	Kingston-on-Thames Cor	*Official*	do.	xx.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Assistant in Borough Surveyor's Office	Stockton Corporation...	110*l.*	March 7th	xvi.
Borough Surveyor	Welshpool Corporation	90*l.*	March 21st	xvi.
Inspector of Nuisances, &c.	do.	70*l.*	do.	xvi.
Collector of Rates	do.	On Commission	do.	xvi.
Clerk of Works	Civil Service Com.	Not stated	March 30th	xvi.

TENDERS.

ANNESLEY.—For the erection of a Wesleyan chapel, Annesley. Mr. J. Wills, architect, Derby :—

Greenwood (accepted)	£935	13	1

BEDFORD.—For new improved seventy-five quarter malthouse, to be erected at Bedford, for Mr. C. Wells. Messrs. H. Stopes & Co., architects, Southwark-street :—

W. J. Adcock, Dover	£3,695	0	0
W. Freshwater, Bedford	3,330	0	0
Wall Bros., Kentish Town, London ...	3,175	0	0
Haynes & Son, Bedford	3,135	0	0
T. Spencer, Bedford....	3,049	0	0
G. Henson, Wellingborough....	3,020	0	0
Warton & Walker, Bedford	2,906	0	0
S. Foster, Bedford (accepted)	2,875	0	0

BERMONDSEY.—For alterations to the Queen's Arms public-house, Spa-road, S.E., for Mr. Frank Rehm. Mr. J. W. Brooker, architect. No quantities :—

Shepherd....	£850	0	0
Burman & Sons....	837	0	0
Mark	773	0	0
Downs	753	0	0
Jackson & Todd....	724	0	0
Croaker	717	0	0
Beale	699	0	0
Battley	689	0	0
J. O. Richardson	657	0	0

BETHNAL-GREEN. — For five houses and stable, Hague-street, Bethnal Green-road, for Mr. H. Borton. Messrs. Thomas & William Stone, architects, Great Winchester-street :—

W. Beale....	£1,550	0	0
Hawkins	1,498	0	0
W. Gregar	1,467	0	0
C. Forrest	1,385	0	0
F. G. Higgs	1,325	0	0
J. H. Johnson	1,293	0	0
B. Wire (accepted)	1,290	0	0

COLCHESTER. — For alterations and repairs at the Angel Hotel, Colchester, for Messrs. Charrington, Nicholl, & Co., East Hill Brewery. Mr. J. W. Start, surveyor, Colchester :—

C. Oldridge	£315	0	0
A. Chambers....	114	10	0
G. Radford....	114	0	0
H. Lewis (accepted)	112	0	0

DULWICH.—For alterations, additions, and new bar fittings, at the Alleyn's Head, West Dulwich, for Mr. H. Jennings. Mr. H. I. Newton, architect, Queen Anne's-gate :—

J. Beale, Westminster Bridge-road (accepted)	£1,530	0	0

[No competition.]

EASTBOURNE.—For new market and arcade, Grove-road, Eastbourne. Messrs. Fuller & Oakden, architects, Eastbourne and Lewes. Quantities by Mr. Robey E. Carpenter, Burton-on-Trent :—

C. Wren, Eastbourne	£7,193	0	0
J. Peerless, Eastbourne....	6,965	0	0
W. Backhurst, Eastbourne	6,875	0	0
Rowland Bros., Horsham	6,500	0	0
J. Martin, Eastbourne	6,495	0	0
E. H. Holloway, New-cross	6,470	0	0
J. Robson, Snaresbrook....	6,298	0	0
P. Peters, Horsham....	6,295	0	0
J. Longley, Crawley....	6,250	0	0
W. King, Dover	6,246	13	4
G. Dobson, Colchester	6,240	0	0
E. Cornwall, Eastbourne	6,230	0	0
J. Wood, Eastbourne	6,150	0	0
Stevens & Pattenden, Eastbourne ...	6,088	6	6
Dore & Son, Eastbourne....	6,078	0	0
Newman & Hart, Eastbourne	6,075	13	3
J. Hayward, Eastbourne *....	5,977	0	0

* Accepted, subject to revisions.

FAVERSHAM (Kent).—For new cottage hospital and dispensary, Faversham, Kent. Mr. Arthur Vernon, architect, High Wycomb :—

	Main Building.			Fences.		
Johnson....	£3,625	0	0	.....	—	
Judges	2,669	16	0	.....	£156	18	0
Lewis & Shrubsole	2,189	0	0	.....	99	0	0
Whiting*	2,180	0	0	.....	160	0	0

* Accepted.

FINCHLEY.—For the erection of a shop and dwelling-house, in High-street, North Finchley. Mr. S. Dorman, jun., architect :—

W. Webster	£700	0	0
Hall & Twitchen (accepted).....	645	0	0

FOWEY.—For the erection of a Congregational chapel, Fowey. Mr. J. Wills, architect, Derby :—

Penter (accepted).....	£1,175	0	0

HAMPSTEAD.—For completion of stabling, at Chislett-road, West Hampstead. Mr. Banister Fletcher, architect :—

Steel	£1,134	0	0
Jarvis	1,057	0	0
Neave	1,008	0	0
Blyton	999	0	0
Stephenson....	730	0	0
J. O. Richardson	729	0	0
Bursell	575	0	0

HEADINGTON (near Oxford).—For alterations and additions to Langley Lodge, for Mr. P. Lyttleton Gell. Mr. Fras. L. Pither, John-street, Bedford-row, architect. Quantities supplied :—

Kingerlee, Oxford	£1,080	0	0
Bottrill, Reading	1,070	0	0
Wilkins & Sons, Oxford....	1,045	0	
Curtis, Oxford	1,012	0	0
Castle & Martin, Oxford....	974	18	2
Neave & Neave, London....	952	0	0
Claridge, Banbury	939	0	0
Kimberley, Banbury	871	0	0
Newton & Idle, Clapham	817	0	0
Add s, Hounslow (accepted)....	764	0	0

HENDON (Middlesex).—For heating apparatus, gas mains, services and fittings to the chapel; hot-water supply to baths, gas-fittings, &c., to new wing of house, and fitting up laundry, fire mains, and other additional works, at the Orphanage of St. Vincent de Paul, Mill-hill, for the Sisters of Charity :—

Purcell & Nobbs, Cleveland-street.....	£728	13	0

HIGH BEECH (Essex).—For the erection of an hotel on the site of the King's Oak public-house, at High Beech, Essex. Mr. D. Burnett, architect, Nicholas-lane :—

A. Reed	£5,707	0	0
Taylor & Co.	5,675	0	0
Nightingale	5,150	0	0
Staines & Co....	4,944	0	0
E. Palmer	4,875	0	0
J. Hicks	4,860	0	0
Perry & Co.	4,844	0	0
Kilby & Gayford	4,836	0	0
Morter....	4,797	0	0
J. Walker	4,644	0	0
H. Wells....	4,659	0	0
J. Egan	4,600	0	0
J. J. Robson	4,499	0	0
Sabey & Son	4,480	0	0
C. Barnes	4,429	0	0
Howell & Sons	4,414	0	0
W. Watson....	4,350	0	0
J Garrud	4,331	0	0
Bentley	4,296	0	0
Newton & Idle	4,189	0	0
Parker....	4,150	0	0
G. & J. Green (accepted)	3,993	0	0

ISLINGTON.—For new factory, Britannia-row, Islington, for Messrs. Lorimer & Co. Messrs. Alexander & Gibson, architects, Great James-street, Bedford-row :—

Woodward	£3,835	0	0
Patman & Fotheringham....	3,773	0	0
Anley	3,520	0	0
J. Beale	3,480	0	0
T. L. Green....	3,259	0	0
Warming Apparatus.			
J. & T. May	£280	0	0
B. W. Davis	260	0	0
Lifts.			
Waygood	£125	0	0
B. W. Davis	120	0	0
Fire Hydrants.			
Shand, Mason, & Co.	£88	0	0
Davis....	66	0	0

LEYTONSTONE (Essex).—For alterations and additions to Nursery House, Leytonstone, Essex, for Messrs. Protheroe & Morris. Mr. J. Cubit, architect, Broad Street-buildings :—

J. Morter	£800	0	0
Cains	780	0	0
Wells	767	0	0
Johnson	686	0	0
J. Cattey (accepted)	673	0	0

LONDON.—For alterations to the Osborne public-house, Stroud Green-road, Finsbury Park, for Mr. G. Soole :—

Gould & Brand (accepted)....	£550	0	0

LONDON.—For rebuilding No. 21, Duke-street, and alterations to No. 21, Houndsditch, for Mr. B. Jacobs. Mr. M. E. Collins, architect. Quantities by Messrs. Batstone Bros. :—

Roberts	£1,841	0	0
Reynolds	1,595	0	0
Downs	1,576	0	0
Hunt	1,498	0	0
J. O. Richardson	1,477	0	0
Sabey & Son	1,417	0	0
Chinchen	1,408	0	0

LONDON. — For rebuilding the Devonshire Arms public-house, Duke-street, Portland-place, W., for Mr. J. J. Maslen. Mr. Charles Worley, architect, Great James-street, Bedford-row. Quantities by Mr. R. C. Gleed, Chancery-lane :—

Patman & Fotheringham	£2,483	0	0
Hoare & Son	2,419	0	0
W. Downs	2,376	0	0
E. Lawrence & Sons	2,174	0	0
Holliday & Greenwood	2,077	0	0
G. & J. Green, Hackney....	1,984	0	0

LONDON. — For general repairs and alterations at Nos. 24 and 25, Dudley-street, Soho. Mr. H. T. Sugden, architect :—

M. Manley....	£697	0	0
Patman & Fotheringham	695	0	0
Masters & Son	569	0	0
T. E. Mitchell (accepted)....	562	0	0

LONDON.—For alterations at No. 76, Guilford-street, Russell-square. Mr. J. E. Sears, architect :—

T. E. Mitchell	£161	0	0
Marsden	157	0	0

NORTH WITHAM (Lincolnshire).—For repairs to the church, new vestry, and organ-chamber, exclusive of interior fittings and old lead on roofs :—

W. Wade, St. Neots (accepted)	£956	0	0

ST. MARY CRAY (Kent).—For a house at St. Mary Cray, Kent, for Mr. H. Harris :—

S. J. Jerrard, Lewisham	£390	0	0
Hart Bros., Chislehurst	300	0	0
T. Knight, Sidcup (accepted)	245	0	0

SEVENOAKS (Kent).—For the erection of a Baptist chapel, Sevenoaks, Kent. Mr. J. Wills, architect, Derby :—

Wiltshire (accepted)	£2,620	0	0

SOUTH NORMANTON.—For the erection of a Wesleyan chapel, South Normanton. Mr. J. Wills, architect, Derby :—

Page (accepted)	£565	0	0

STONEY STRATFORD (Bucks).—For the erection of new banking premises, for the Bucks and Oxon Union Bank, Limited. Mr. Charles P. Ayres, architect, Watford :—

W. Sear, Hemel Hempstead	£2,600	0	0
J. W. White, Stoney Stratford	2,439	0	0
Marshall & Boyse, Buckingham	2,368	0	0
T. & S. Orchard, Banbury*	2,244	0	0

[Architect's estimate, 2,350*l.*]

* Accepted.

STRATFORD.—For additional stabling, Angel-lane, Stratford, for Messrs. Carter, Patterson, & Co., under the superintendence of Mr. W. Eve, 10, Union-court :—

J. H. Johnson	£725	0	0
Downs	712	0	0
Brass & Son	698	0	0
Harris & Wardrop	690	0	0
J. Godfrey & Son	690	0	0
Holland	679	0	0
Higgs	660	0	0

SYSTON.—For the erection of a Primitive Methodist chapel, Syston. Mr. J. Wills, architect, Derby :—

Hickling (accepted)	£900	0	0

WALLINGTON (Surrey).—For the erection of the Presbyterian Church of England and Lecture-hall, Wallington, Surrey. Mr. J. Wills, architect, Derby :—

Stewart (accepted)	£3,895	0	0

WINCHESTER.—For alterations and repairs at Nos. 30 and 31, High-street, Winchester, for Messrs. Clarke & Sons, of Abingdon, Berks. Mr. J. G. T. West, architect, Abingdon :—

W. Coles, Winchester	£480	0	0
Carter & Sons (accepted)	395	0	0

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